Series 1937, No. 1 Issued February 1941

Soil Survey

Isle of Wight County Virginia

By
EDWARD SHULKCUM
Virginia Agricultural Experiment Station, in Charge
and
R. E. DEVEREUX and C. S. SIMMONS
United States Department of Agriculture

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF PLANT INDUSTRY
In cooperation with the
Virginia Agricultural Experiment Station

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SOIL SURVEY OF ISLE OF WIGHT COUNTY, VIRGINIA

By EDWARD SHULKCUM, Virginia Agricultural Experiment Station, in Charge, and R. E. DEVEREUX and C. S. SIMMONS, Division of Soil Survey,[1] Bureau of Plant Industry

Area inspected by W. EDWARD HEARN, Inspector, District 2

United States Department of Agriculture in cooperation with the Virginia Agricultural Experiment Station

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COUNTY SURVEYED

Isle of Wight County is in the southeastern part of Virginia (fig. 1). Its northeastern boundary is formed by the James River. Its southern extremity is about 8 miles north of the North Carolina-Virginia State line. It is of an irregular wedge shape, is approximately 35 miles in length from north to south, and has a mean width of about 10 miles. It is bordered on the east by Nansemond County and on the west by Southampton County. The principal town is Smithfield, which is about 60 miles by air line from Richmond, the State capital, and about 25 miles from Norfolk. The area of the county is 314 square miles, or 200,960 acres.

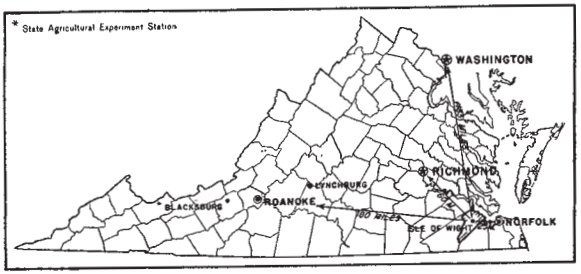

FIGURE 1.—*Sketch map showing location of Isle of* Wight County, Va.

[1] The field work for this survey was done while the Division was a part of the Bureau of Chemistry and Soils.

This county lies wholly within the Virginia section of the Atlantic Coastal Plain, in the tidewater section of the State. It is mostly on the Wicomico marine terrace but also covers small remnants of the Chowan and Dismal Swamp terraces along the Blackwater River on the west and the James River on the north. The more level or flat areas occur on the Dismal Swamp terrace in the eastern part of the county, and the gently rolling or undulating areas are on the Wicomico terrace, extending from a point about 2 miles east of Smithfield westward to the western border of the county.

In general, the surface ranges from level to undulating or gently rolling. The gently rolling areas include small bodies of sloping to steep land on the breaks toward the drainageways. Small areas of alluvial soils, undifferentiated, and swamp along streams and fairly large areas of tidal marsh along the James River are flat.

The most outstanding physical feature is the comparatively wide smooth divide beginning a short distance south of Windsor and extending in a northerly or slightly northeasterly direction through the county. This divide consists of disconnected high flat areas, from which the land slopes to the southwest on one side and to the southeast on the other.

In the eastern part of the county, an escarpment, characterized by a barely noticeable transitional change from a gentle to a steep slope or bluff ranging from 10 to 20 feet in elevation, separates the Dismal Swamp terrace from the Wicomico terrace.

The greater part of the county is well drained. Most of the well-drained soils are on the Wicomico terrace and require very little artificial drainage, except on the high broad flats, where natural drainageways are not well established. The soils on the Dismal Swamp terrace require considerable artificial drainage before they can be farmed properly.

The western part is drained by the Blackwater River, which is the western boundary. This river flows southward out of Virginia into North Carolina and joins the Nottoway River to form the Chowan River, which empties into Albemarle Sound. The southern and eastern parts are drained by swamps and creeks that flow into Nansemond County on the east and empty into the Nansemond River. The northern part is drained by the Pagan River and small tributaries of the James River. These tributaries are rather shallow intermittent drainageways and do not carry a great volume of water. Drainage of the northern part is unique in that the various creeks making up the Pagan River drainage system originate very near the James River, yet flow away from that river toward the south and enter the Pagan River, which empties into the James River in the northeastern part of the county.

The drainage patterns are dendritic. The better drained areas border the Blackwater River on the west and the boundary of the county on the east. These areas are dissected by many creeks and swamps. The poorly drained areas occur mainly in the central part within fairly large disconnected high flats, commonly called pocosins. A poorly drained area occurs east of the Smithfield-Suffolk highway south and southeast of Rescue.

The elevation ranges from sea level in the eastern part of the county along the James River to 100 feet above sea level in the central part near Central Hill.[2] Smithfield lies from 20 to 30 feet above sea level. The elevations in the southern part are from 15 to 25 feet above sea level in the vicinity of Franklin, 85 feet at Windsor, and 39 feet at Zuni on the Blackwater River.

The vegetation bears a marked relationship to the soils. It differs greatly on well-drained and poorly drained or wet soils. The native trees are loblolly pine, shortleaf pine, Virginia pine, and some spruce pine. Pine trees grow more rapidly on the well-drained soils than on the poorly drained soils, although the quality of the wood is better on the wetter soils. The hardwoods, consisting of black oak, southern red oak, white oak, water oak, sycamore, and poplar, grow on the sloping areas bordering the swamps and drainageways. Practically pure stands of cypress are in the swamps, and good stands of tupelo (black gum) are on the alluvial soils. The undergrowth on the well-drained soils consists of small holly and cedar trees, briers, and native grasses, and it is rather scant; but on the poorly drained soils it is thick, in some places almost impenetrable, and consists of gallberry, waxmyrtle, cane, reeds, running briers, wild grapevines, and coarse grasses. Small sweetgum bushes grow in the wetter areas on the upland soils, and coarse heavy water grasses cover the marshes. Practically all of the original stand of timber has been cut, but the present stands of trees, where protected from fires, represent as good a second growth as there is in the tidewater section of Virginia. The lumber industry constitutes one of the main sources of revenue.

The area now included in Isle of Wight County was first visited by white men in 1608, when Capt. John Smith, driven by the necessity of obtaining food for the colonists at Jamestown, crossed the James River and procured 14 bushels of corn from a tribe of Indians, called the Worrosquoyacks, who then lived in the northern part of the territory that is now Isle of Wight County. The first white settlers established themselves in 1619, near the mouth of Lawnes Creek close to the James River. These early settlers, who were of Cavalier origin, came from the city of Bristol, England. In 1634 the Virginia colony was divided into eight shires, or counties, one of which was called Worrosquoyack for the tribe of Indians. In 1637 the name was changed to Isle of Wight for the English island of that name near the mainland of southern England. The present boundaries were established in 1674 by an act of the House of Burgesses.

In the northern part of the county along the Smithfield-Norfolk highway is the old St. Luke's Church, erected in 1632, said to be the oldest Protestant church building in North America. The original wall still supports the present structure.

The population, as reported by the Federal census of 1930, was 13,409, all classed as rural, with an average density of 42.7 persons to the square mile. The population is not uniformly distributed. Smithfield has a population of 1,179.

[2] Elevations from U. S. Geological Survey topographic maps.

A very small settlement, Isle of Wight, is the county seat. It is located approximately in the center of the county. Smithfield, the largest town, is the principal business center and is the home of the Smithfield hams, which have in the last half century become nationally known for their excellent quality and flavor. Zuni and Windsor are important trading centers and shipping points in the southern part of the county. Both are located on the Norfolk & Western Railway. Walters, another trading center and shipping point, is on the Virginian Railway. Rushmere, a small town in the northwestern part, serves as a trading center for that part of the county. Battery Park and Rescue, twin towns in the northeastern part, are engaged chiefly in the fish and oyster industry and also serve as shipping points for transportation by water and a harbor for boats engaged in fishing in the James River and Chesapeake Bay. Franklin, an incorporated town in Southampton County, lies partly within Isle of Wight County. It is the center of the lumber industry in the southeastern section of tidewater Virginia. It is the chief trading center for the people living in the southern part of the county and employs considerable local labor for its lumber mills, processing plants, and other industries. Carrsville, a small town close to the Nansemond County line, also is a trading center and shipping point. It is located on the Seaboard Air Line Railway.

The outside markets are Norfolk, Richmond, Newport News, Suffolk, Baltimore, and Washington. Peanuts and cotton are sold in Suffolk, Franklin, and Zuni, and most of the hogs raised are marketed in Smithfield or in Richmond.

Four railroads traverse the southern end of the county, but no railroads serve the northern part. The Norfolk & Western crosses the county in a southeast-northwest direction. The Virginian roughly parallels the Norfolk & Western on the south. The Seaboard Air Line and the Southern serve only a small section in the extreme southern part.

The Pagan and James Rivers in the northern part are navigable, and boats of considerable size use their waters in transporting freight, such as lumber and sea food. No passenger service by water is available at present.

United States Highways Nos. 17, 460, and 58 pass through the northeastern, southern, and extreme southern parts, respectively; and hard-surfaced State highways reach all parts. Most of the State-maintained sand-clay roads are passable throughout the year, and very few of the second-class dirt roads become impassable at any time.

Telephone service is excellent, and communications can be obtained with any part of the county. Transmission lines and electrical distribution lines enter and traverse practically all sections, and rural electrification is becoming more popular and increasing considerably in the better farming sections.

Churches and schools, for both white and colored, are conveniently located and well distributed. The school system is considered excellent, and consolidated schools are located in the principal towns, busses being used for transporting children from rural districts to the school centers.

An oystershell-grinding plant is located at Battery Park, where a large quantity of oystershells are ground to be used on the land instead of ground limestone.

Marl is dug from small pits and from the James River escarpment in the northern part of the county. This marl is of two classes, locally known as red marl and green marl. The red marl is of rather low quality and contains considerable sand and clay, which cement rather large fragments of oystershells into a rough mass. The green marl, which is a rather compact mass of sand and sticky clay, contains very finely divided particles of oystershells and some larger fragments of oystershells and other shells. This marl is said to be of a higher quality than the red marl, although it is not used so extensively as the red marl.

Large sawmills operated at Franklin and at Smithfield provide part-time employment to the farmers in the vicinity and furnish a market for farm timber. Lumber is shipped from these towns by rail and water to northern cities. A wood-treating plant at Franklin preserves wood by special process for a long time. A wood-pulp mill has been in operation for several years and uses considerable local labor, part- and full-time; also quantities of farm timber.

The oyster and fishing industry centered around Battery Park and Rescue affords considerable employment to the people in the northern part of the county. Many boats use Jones Creek as a small sheltering harbor, and many boats operating in the James River oyster and fishing field are owned by residents of this district. Oysters and fish are sold locally or shipped to outside markets. Oyster-packing plants operate at Rescue and other places along the James River and ship the packed oysters to various points in eastern United States.

CLIMATE

The climate of Isle of Wight County is oceanic. It is characterized by long, hot summers and, as a rule, comparatively short, mild winters tempered by the proximity of the county to large bodies of water—the Atlantic Ocean and Chesapeake Bay. Although the winters are mild, a few days in January and February have low temperatures, the lowest recorded temperature being −15° F. The average length of the frost-free season is 191 days, from April 13, the average date of the latest killing frost, to October 21, the average date of the earliest. Frost has been recorded as late as May 12 and as early as October 1.

The mean annual rainfall is 48.98 inches. The driest year on record was 1930, which had a total precipitation of 29.94 inches, and the wettest year was 1889, which had a total precipitation of 71.85 inches. There is very little snow. Distribution of rainfall during the growing season is excellent. The fall is considerably drier than spring or summer, allowing the farmer good weather in which to harvest his crops. A long growing season and abundant well-distributed moisture are important factors in the production of crops.

Storms do little damage to crops, as the county is far enough south to escape the cold northern blizzards of winter and far enough north to escape the tropical storms of the Gulf and Southern States. Rain

generally falls in slow and steady showers rather than in sudden violent windstorms and downpours. Severe droughts do not occur.

Climatic conditions are excellent for the production of early spring vegetables and to some extent for winter truck crops, but few truck crops are produced at present. Grasses do well on the heavier soils and afford excellent winter pasture. The earliness of the spring is a very favorable factor in the production of cotton and peanuts on the light-colored well-drained soils, and the late fall is a favorable factor in the production of the cotton planted on the poorly drained soils.

Table 1 gives the normal monthly, seasonal, and annual temperature and precipitation, as recorded by the United States Weather Bureau station near Runnymede, Surry County, Va., which adjoins Isle of Wight County. These data are fairly representative of climatic conditions in Isle of Wight County.

TABLE 1.—*Normal monthly, seasonal, and annual temperature and precipitation near Runnymede, Surry County, Va.*

[Elevation, 25 feet]

Month	Temperature			Precipitation			
	Mean	Absolute maximum	Absolute minimum	Mean	Total amount for the driest year (1930)	Total amount for the wettest year (1889)	Snow, average depth
	°F.	°F.	°F.	*Inches*	*Inches*	*Inches*	*Inches*
December	40.9	77	0	3.37	2.81	0.85	2.8
January	39.7	76	−15	3.40	3.75	3.66	3.7
February	39.6	78	−6	3.99	.77	4.45	4.5
Winter	40.1	78	−15	10.76	7.33	8.96	11.0
March	48.6	93	10	4.64	1.18	5.62	2.0
April	56.5	96	21	3.92	2.92	11.40	.4
May	65.9	97	31	4.22	2.39	5.45	.0
Spring	57.0	97	10	12.78	6.49	22.47	2.4
June	73.3	101	42	4.93	6.93	8.82	.0
July	77.2	101	48	6.06	2.60	7.05	.0
August	75.7	104	49	4.88	1.50	6.00	.0
Summer	75.4	104	42	15.87	11.03	21.87	.0
September	69.9	101	37	3.43	1.16	5.50	.0
October	58.9	92	21	3.54	2.46	7.25	(1)
November	49.0	83	16	2.60	1.47	5.80	.2
Fall	59.3	101	16	9.57	5.09	18.55	.2
Year	57.9	104	−15	48.98	29.94	71.85	13.6

[1] Trace.

AGRICULTURAL HISTORY AND STATISTICS

The agriculture of Isle of Wight County started more than 300 years ago. The pioneers settled chiefly in the northern part along navigable streams, because the soils here were suitable and also because the people could concentrate their forces against the savage Indians who roamed the area south of the James River at that time.

When the first settlements were made, agriculture consisted chiefly of growing the necessary foods to prevent starvation of the colonists. A few years later, trade was established with the Indians, from whom

the settlers obtained corn and other foodstuffs. The cultivation of tobacco came to engage so much attention for export to England that failure of the Indians' corn crop produced a food shortage and endangered the lives of the colonists. One of the early laws of the colony required every plantation owner to grow at least 2 acres of corn for every laboring person on the plantation, and imposed a severe penalty for infraction of the law. But even so, the best soils still were devoted to tobacco.

The growing of cotton was introduced at an early date, and, although the soils were well adapted to its production, very small crops were grown in the early days. After the cotton gin was invented, however, the acreage in cotton increased considerably.

Peanuts were produced at an early date for home consumption. After the Civil War (1866) the Union armies took back to the North and spread a liking for the peanut. This demand was one factor in the later cultivation of this crop on a large scale.

During the latter part of the nineteenth century, agriculture developed rapidly. Corn led all other crops in acreage until 1929, when it was surpassed by peanuts and hay. Legumes accounted for the large increase in hay, and soybeans harvested for beans became an important crop. The acreage in cotton continued to expand until the initiation of the crop-control program. Market vegetables, especially watermelons, have increased in importance during the last few years. They were grown on 601 acres in 1929 and 1,546 acres in 1934, of which 421 acres and 1,436 acres, respectively, were devoted to watermelons. The production of potatoes and sweetpotatoes has declined since 1909.

Table 2 gives the acreages of the principal crops in stated years from 1879 to 1934.

TABLE 2.—*Acreages of the principal crops in Isle of Wight County, Va., in stated years*

Crop	1879	1889	1899	1909	1919	1929	1934
	Acres	*Acres*	*Acres*	*Acres*	*Acres*	*Acres*	*Acres*
Peanuts		9,244	15,132	13,437	19,615	19,632	19,934
Soybeans					751	1,031	1,417
Cotton	850	40	9	181	1,123	3,693	1,906
Corn	18,038	15,408	19,677	21,472	22,185	16,584	16,749
Hay	51	429	910	1,039	1,125	20,543	17,207
Legumes for hay					158	19,301	16,312
Potatoes		407	947	1,357	717	341	499
Sweetpotatoes	654	313	443	418	353	197	305

Livestock on farms on January 1, 1935, included 783 horses, 1,941 mules, 2,862 cattle, 19,661 swine, 753 sheep, 684 goats and 74,390 chickens. In general, the numbers of livestock increased from 1880 to 1920 and have decreased since. The numbers of cattle and mules, however, represent an increase over those reported in 1930.

The largest farm expenses are for labor and fertilizer, and on the larger farms devoted chiefly to cotton, peanuts, and corn, considerable money is spent for seed and feed.

The use of commercial fertilizer shows an increase since 1879, and in 1929 lime and fertilizer, including 6,299 tons of commercial fertilizer, were bought at a cost of $225,364, or an average of $192.62 a farm for each of the 1,170 farms reporting. Most of the commer-

cial fertilizers are bought ready mixed, the formulas used being 2–8–4, 4–8–4, and 3–8–3.[3]

The hire of labor was reported by 532 farms in 1929 at a total wage bill of $163,955, or an average of $308.19 a farm. Labor usually is plentiful, and practically all the farm laborers are Negroes. Wages depend on economic conditions and on the kind of labor. The hired man usually is given a tenant house on the farm and hired by the year but paid only for the days he works. Women and older children are employed in such work as is best suited to them and are paid either by the day or by piece work, as in picking cotton, when they receive so much a pound of cotton picked.

On some farms the tenant furnishes teams, implements, labor, and two-thirds of the seed and fertilizer, and gives the owner one-third of the crop as rent. On other farms the tenant furnishes teams, implements, labor, and one-half of the seed and fertilizer, and gives the owner one-half of the crop. On still other farms the owner furnishes the teams, equipment, and one-half of the seed and fertilizer and receives one-half of the crop, but the tenant receives his share only from the crop that he cultivates and nothing from the livestock and other sources of income on a farm. A few tenants rent for cash.

The number of farms was larger in 1935 than in 1880, although the largest number of farms reported was in 1920. The present trend toward larger farms conforms with the trend toward more general farming and less specialized farming and an increase in the number of animal units. The average size of farms was smaller in 1935 than in 1880, although not so small as in 1920. Table 3, compiled from United States census reports, shows the number, average size, and tenure of farms in census years.

TABLE 3.—*Number, size, and tenure of farms in Isle of Wight County, Va., in stated years*

Year	Farms	Average size	Farms operated by—			Year	Farms	Average size	Farms operated by—		
			Owners	Tenants	Managers				Owners	Tenants	Managers
	Number	*Acres*	*Percent*	*Percent*	*Percent*		*Number*	*Acres*	*Percent*	*Percent*	*Percent*
1880	1,263	137.0	66.1	33.9	0.0	1920	1,779	85.6	55.0	44.7	0.3
1890	1,095	129.0	70.5	29.5	.0	1930	1,338	93.4	46.5	53.1	.4
1900	1,511	103.8	63.1	35.0	1.9	1935	1,416	104.5	45.3	54.4	.3
1910	1,645	93.6	59.2	40.6	.2						

Many of the old homes of the former large landowners remain and are in excellent condition. On some of the better farms new homes have been built and are maintained in good repair. Equipment on the average farm includes light plows and generally light work animals; some two-horse plows; light cultivators; riding plows; cotton, corn, and peanut planters; and stalk cutters. On the larger farms, such as the dairy farms, of which there are about 12 in the county, tractors and larger and heavier farm implements are used. Peanut pickers are owned by individuals, who collect a certain quantity of the peanuts in return for the services of the picker.

[3] Percentages, respectively, of nitrogen, phosphoric acid, and potash.

Although very little land is being sold or bought at present, some transactions show that the better farm land brings prices that are considered average throughout the southeast coastal-plain section. The heavy or more poorly drained soils differ in price, depending on their nearness to highways and also on the stand and kind of timber. Most of the swamp and alluvial soils, undifferentiated, are sold entirely in accordance with the quality, stand, and kind of timber growing on them.

SOIL-SURVEY METHODS AND DEFINITIONS

Soil surveying consists of the examination, classification, and mapping of soils in the field.

The soils are examined systematically in many locations. Test pits are dug, borings are made, and exposures, such as those in road or railroad cuts, are studied. Each excavation exposes a series of distinct soil layers, or horizons, called, collectively, the soil profile. Each horizon of the soil, as well as the parent material beneath the soil, is studied in detail; and the color, structure, porosity, consistence, texture, and content of organic matter, roots, gravel, and stone are noted. The reaction of the soil [4] and its content of lime and salts are determined by simple tests. Drainage, both internal and external, and other external features, such as relief, or lay of the land, are taken into consideration, and the interrelation of soils and vegetation is studied.

The soils are classified according to their characteristics, both internal and external, special emphasis being given to those features influencing the adaptation of the land for the growing of crop plants, grasses, and trees. On the basis of these characteristics soils are grouped into mapping units. The three principal units are (1) series, (2) type, and (3) phase. In places two or more of these principal units may be in such intimate or mixed pattern that they cannot be clearly shown separately on a map, but must be mapped as (4) a complex. Areas of land such as coastal beach or bare rocky mountainsides that have no true soil are called (5) miscellaneous land types.

The most important group is the series, which includes soils having the same genetic horizons, similar in their important characteristics and arrangement in the soil profile, and developed from a particular type of parent material. Thus, the series includes soils having essentially the same color, structure, and other important internal characteristics and the same natural drainage conditions and range in relief. The texture of the upper part of the soil, including that commonly plowed, may vary within a series. The soil series are given names of places or geographic features near which they were first found. Thus, Portsmouth, Norfolk, Moyock, and Bladen are names of important soil series in this county.

Within a soil series are one or more soil types, defined according to the texture of the upper part of the soil. Thus, the class name of the soil texture, such as sand, loamy sand, sandy loam, loam, silt loam, clay loam, silty clay loam, and clay, is added to the series name to give the complete name of the soil type. For example, Norfolk

[4] The reaction of the soil is its degree of acidity or alkalinity expressed mathematically as the pH value. A pH value of 7 indicates precise neutrality; higher values indicate alkalinity, and lower values indicate acidity.

fine sandy loam and Norfolk sand are soil types within the Norfolk series. Except for the texture of the surface soil, these soil types have approximately the same internal and external characteristics. The soil type is the principal unit of mapping, and because of its specific character it is usually the soil unit to which agronomic data are definitely related.

A phase of a soil type is a variation within the type, which differs from the type in some minor soil characteristic that may have practical significance. Differences in relief, stoniness, and the degree of accelerated erosion are frequently shown as phases. For example, within the normal range of relief for a soil type, there may be areas that are adapted to the use of machinery and the growth of cultivated crops and others that are not. Even though there may be no important difference in the soil itself or in its capability for the growth of native vegetation throughout the range in relief, there may be important differences in respect to the growth of cultivated crops. In such an instance the more sloping parts of the soil type may be segregated on the map as a slope or hilly phase. Similarly, soils having differences in stoniness may be mapped as phases, even though these differences are not reflected in the character of the soil or in the growth of native plants.

The soil surveyor makes a map of the county or area, showing the location of each of the soil types, phases, complexes, and miscellaneous land types, in relation to roads, houses, streams, lakes, section and township lines, and other local cultural and natural features of the landscape.

SOILS AND CROPS

Isle of Wight County lies wholly within the Atlantic Coastal Plain region of Virginia and is locally known as the cotton and peanut belt of the State. About 30 or 35 percent of the total area of the county has been cleared and is under cultivation, and the rest supports a forest of second-growth trees consisting chiefly of loblolly pine, shortleaf pine, spruce pine, and such hardwoods as white oak, southern red oak, tuliptree (yellow poplar), sweetgum (red gum), tupelo (black gum), and red maple. In the ravines and river swamps, beech, sycamore, willow, cypress, and gum grow in abundance. The greater part of the forested area of the upland soils of the Bladen and Lenoir series support almost pure stands of loblolly pine, which is the most important tree in the forests of the county. Most of the forest land supports a very dense undergrowth, especially on the heavy or wetter soils of the Bladen and Lenoir series; but this thick undergrowth is noticeably lacking on the lighter or better drained soils of the Norfolk, Craven, and Ruston series. The undergrowth consists chiefly of gallberry, waxmyrtle, huckleberry, sweet gale (baybush), holly, reeds, and canes. Abandoned fields or fallow land support broomsedge, crabgrass, and Bermuda grass. The largest and best quality of timber grows on the poorly drained soils, owing chiefly to the fact that these soils have probably never been under cultivation because of lack of drainage and difficulty of cultivation. Although these are inherently the most fertile soils in the county, present agricultural economic conditions do not justify the cost of clearing and draining them in order to put them in condition to produce crops.

The present agriculture is carried on largely on the soils that are naturally well drained, light textured, and easily cultivated. These soils include members of the Norfolk, Craven, and Marlboro series, and they are recognized by the farmers as early soils or soils well adapted to the production of cotton, peanuts, potatoes, sweetpotatoes, and vegetables for home use. As peanuts, cotton, and potatoes are among the principal cash crops, much care is used in the selection of the soils on which they are grown. Although these crops are grown to a slight extent on the Moyock, Onslow, Lenoir, and Bladen soils, the yields generally are lower and the quality of the peanuts and potatoes is poorer on these poorly drained soils than on the well-drained soils. When drainage of the poorly drained soils is improved by means of open ditches and canals, they return good yields of such crops as corn, soybeans, and hay and are better suited for pasture than the well-drained soils, although a very small acreage is devoted to permanent pasture. The dark heavy soils are well adapted to the production of lespedeza for pasture or hay, and lespedeza is recommended as the best summer pasture crop.

Corn, one of the leading crops, is grown on all cultivated soils and is consumed locally for feeding work animals, for fattening hogs, and for grinding into meal for the farm family. Soybeans are produced to a great extent in association with corn, and on the heavier soils they are grown extensively for hog pasture. Rye, oats, and crimson clover are grown primarily as winter crops, which ordinarily are grazed for a short period and then turned under.

Sweetpotatoes, potatoes, and other vegetables are grown on practically every well-managed farm for home consumption, and some are sold on local markets. Very few winter vegetables are grown, and few truck crops other than watermelons are produced on a commercial scale, although the lighter-textured soils are well adapted to them.

The soils of this county can be grouped according to their agricultural use, drainage conditions, and character of the soil material into (1) light-colored well-drained soils, (2) light-colored poorly drained soils, and (3) miscellaneous soils and land types. In the following pages the soils are described in detail, and their agricultural importance is discussed; their distribution is shown on the accompanying soil map; and their acreage and proportionate extent are given in table 4.

TABLE 4.—*Acreage and proportionate extent of the soils mapped in Isle of Wight County, Va.*

Soil type	Acres	Percent	Soil type	Acres	Percent
Norfolk fine sandy loam	46,336	23.1	Bladen fine sandy loam	3,456	1.7
Norfolk fine sandy loam, deep phase	20,608	10.3	Bladen silt loam	2,944	1.5
Norfolk loamy fine sand	1,984	1.0	Norfolk fine sand	8,448	4.2
Norfolk sandy loam	896	.4	Norfolk sand	640	.3
Craven fine sandy loam	11,200	5.6	Norfolk fine sandy loam, slope phase	7,232	3.6
Craven very fine sandy loam	2,688	1.3	Ruston fine sandy loam, slope phase	1,728	.9
Marlboro fine sandy loam	1,792	.9	Plummer fine sandy loam	576	.3
Norfolk-Sassafras fine sandy loams	1,280	.6	Portsmouth fine sandy loam	896	.4
Lenoir fine sandy loam	25,536	12.7	Kalmia fine sand	832	.4
Lenoir very fine sandy loam	3,136	1.6	Alluvial soils, undifferentiated	4,480	2.2
Lenoir silty clay loam	3,072	1.5	Swamp	12,416	6.2
Lenoir sandy loam	512	.3	Tidal marsh	6,912	3.4
Moyock fine sandy loam	11,776	5.8	Tidal marsh, high phase	576	.3
Moyock fine sandy loam, flat phase	1,536	.8	Coastal beach	512	.3
Moyock sandy loam	896	.4			
Onslow fine sandy loam	16,064	8.0	Total	200,960	

LIGHT-COLORED WELL-DRAINED SOILS

The group of light-colored well-drained soils includes Norfolk fine sandy loam, Norfolk fine sandy loam, deep phase, Norfolk loamy fine sand, Craven fine sandy loam, Craven very fine sandy loam, Marlboro fine sandy loam, and the complex—Norfolk-Sassafras fine sandy loams. The total area of these soils is 135.6 square miles, or 43.2 percent of the total area of the county. About 65 percent of these soils is under cultivation. This is a greater proportion than of the soils in any other group. Drainage is better, tillage or cultivation is easier, and the relief of these soils is more favorable than of any other soils in the county. These soils occur on the breaks to streams and in undulating and gently rolling areas along the smaller drainageways and high ridges. Owing to their favorable relief and good drainage, they are suitable to a diversified type of agriculture and to the use of improved farm machinery. Practically all of the original timber has been cut, and most of the second-growth trees in the wooded areas are loblolly pine, some shortleaf pine, white oak, post oak, maple, and various other hardwoods.

These light-colored well-drained soils are well distributed over the county. The more extensive areas are in the eastern and northeastern parts and the smaller areas in the western part. They are characterized by light-gray or grayish-yellow surface soils. The Norfolk and Marlboro soils have yellow friable sandy clay subsoils. The subsoils of the Craven soils differ from the corresponding layers of the Norfolk soils in having a decidedly heavier texture, a tough and plastic consistence, and distinctly mottled heavy clay in the lower part. The surface soils of the Norfolk-Sassafras fine sandy loams are dominantly light grayish brown, and the subsoils range in color from yellow to reddish brown, the latter color being representative of the Sassafras soils as mapped in other areas on the Eastern Shore of Virginia. Slight depressions, or sinkholes, ranging from 1 foot to 5 feet below the normal surface level, are characteristic of Norfolk-Sassafras fine sandy loams. These depressions probably are due to the leaching of marl beds that underlie the soil. Small rounded quartz gravel and pebbles are scattered over small areas and throughout the soil mass in some of these soils. In most places the soils are mellow friable fine sandy loams.

The soils of this group are known as early soils and produce most of the cotton, peanuts, and potatoes grown in the county. Inherently, they are not so fertile as some of the poorly drained soils, but they are early, respond readily to fertilizer treatment, and return the most profitable crops produced. Sheet erosion is very noticeable on the sloping areas under clean cultivation, especially on the Craven soils, but gullying is not severe. All the soils are acid to very strongly acid in reaction,[5] low in content of organic matter, require frequent applications of fertilizer and lime, and are subject to extreme leaching where left bare or under clean cultivation; yet, owing to their physical properties, they are rightly considered the most productive soils in the county.

Norfolk fine sandy loam.—In cultivated fields the 5- to 8-inch surface layer of Norfolk fine sandy loam is light-gray or grayish-

[5] See table 7, pH values, in section on morphology and genesis of soils, p. 38 .

yellow loamy fine sand or light fine sandy loam. Underlying this layer is pale-yellow or grayish-yellow loamy fine sand or light fine sandy loam, which continues to a depth ranging from 10 to 14 inches, where it passes into the subsoil. In wooded areas or land that has been fallow for a considerable time, the topmost 2-inch layer of the surface soil contains sufficient organic matter to give it a dark grayish-brown or dark-gray color. The subsoil, extending to a depth ranging from 24 to 36 inches, is yellow or brownish-yellow friable and crumbly fine sandy clay. This material is very friable and crumbly and is easily crushed to a mealy mass. Beneath this layer is mottled light-gray, light-red, and reddish-yellow slightly compact but friable fine sandy clay material, which extends to a depth ranging from 50 to 70 inches, where it grades into stratified layers of fine sand, fine sandy clay, and clay.

A small area of Norfolk very fine sandy loam, 1 mile due south of Smithfield, is included with this soil as mapped. This soil differs from Norfolk fine sandy loam in that the surface soil, to a depth of 6 inches, is very fine sandy loam and has a very smooth feel. Underlying the surface layer is pale-yellow friable and somewhat brittle heavy very fine sandy clay or clay loam, which extends to a depth ranging from 28 to 35 inches, where the material grades into mottled light-gray, pale-yellow, or reddish-yellow heavy very fine sandy clay. This soil clods readily if plowed when wet and, on similar slope and under the same cultural treatment, is more subject to sheet erosion than is Norfolk fine sandy loam.

Norfolk fine sandy loam is uniformly distributed over the entire county, the largest areas or belts occurring along the breaks to the creeks and drainageways. Some of the largest areas are west and southwest of Carrsville, in the vicinity and northeast of Walters, in the vicinity and south of Smithfield, southeast of Central Hill, and south of Mill Swamp Church.

This is considered one of the best soils in the county for the production of cotton, peanuts, garden vegetables, and sweetpotatoes. Peanuts yield from 50 to 75 bushels an acre, and cotton from ½ to 1 bale. About 50 percent of the cultivated land is devoted to peanuts, 20 percent to cotton, a very small proportion to sweetpotatoes and specialized crops, and the rest to corn, soybeans, and other crops. Peanuts are not so generally fertilized on Norfolk fine sandy loam or any of the other soils as are the other crops grown. About 300 pounds of land plaster an acre are applied at blooming time, but some farmers use from 300 to 500 pounds of a 2–8–4 or 0–12–6 fertilizer. For cotton, fertilizer applications ranging from 300 to 500 pounds an acre of 3–8–3, 4–8–4, or 4–10–6 are used, together with a side dressing of 100 pounds of nitrate of soda or sulfate of ammonia. Sweetpotatoes yield from 75 to 250 bushels an acre and are fertilized with 600 to 1,000 pounds of 3–3–15. Corn yields from 20 to 40 bushels an acre and is fertilized with 200 to 300 pounds of 2–8–4 or 4–8–4 and generally is side dressed with 75 to 200 pounds of nitrate of soda.

Norfolk fine sandy loam is one of the best developed and most productive soils of the county. It warms early in spring; it is well drained, both externally and internally, which allows cultivation soon after rains; and it is loose enough for good root penetration. The fine sandy clay subsoil prevents excessive leaching and allows the

soil to be built up under proper management. Although this soil is well adapted to the production of truck crops, bright tobacco, berries, and small fruits, none of these crops is grown on a commercial scale.

Norfolk fine sandy loam, deep phase.—Norfolk fine sandy loam, deep phase, occurs in association with Norfolk fine sandy loam, occupying a slightly higher position and smaller areas than that soil. Small areas are south of Beaverdam Church, in the vicinities of Zuni and Blackwater School, and broken areas are around Central Hill. The largest bodies are along Rattlesnake Swamp, south, west, and north of Stotts Crossroad, and other small areas occur over the county.

The 6- to 8-inch surface layer of Norfolk fine sandy loam, deep phase, is light-gray loamy fine sand or fine sandy loam, which, on drying, becomes very light gray. In many places medium sand, coarse sand, and some very fine gravel are on the surface. Below the surface layer is pale-yellow loamy fine sand, which extends to a depth ranging from 16 to 30 inches, where it passes into yellow friable crumbly fine sandy clay. This continues to a depth ranging from 40 to 50 inches and grades into mottled light-gray, reddish-yellow, and light-red fine sandy clay. In the western part of the county near Zuni and Burnt Mills Swamp, this fine sandy clay subsoil layer is reached at a depth ranging from 30 to 36 inches. The relief is undulating or slightly rolling, and both internal and external drainage are good. In the areas where the subsoil is at a greater depth below the surface, drainage is almost excessive.

This deep soil produces a better grade of peanuts than does typical Norfolk fine sandy loam, although yields are not so high. Cotton yields are not so large on the deep soil as on the typical soil, and heavy applications of fertilizer are required by this crop. No crop grown on the deeper soil yields as much as the same crop grown on typical Norfolk fine sandy loam. Fertilizer applications are practically the same on the two soils, except for cotton and corn. Heavier applications of 3–8–3 and 4–8–4 are used for corn on the deeper soil. Acre yields of corn range from 15 to 25 bushels.

Less than 40 percent of Norfolk fine sandy loam, deep phase, is under cultivation, chiefly to cotton, peanuts, and corn, and the rest is in woods or supports a growth of small trees, mainly pines, and broomsedge since it has become fallow land. Although this is an early soil and is easily tilled, it is not so strong and will not hold fertilizers and manures so well as typical Norfolk fine sandy loam, owing to the depth of the lighter material above the fine sandy clay subsoil.

Norfolk loamy fine sand.—Norfolk loamy fine sand, a soil of small extent, occupies small areas in the west-central part of the county near Central Hill, in the northwestern part on the east side of Mill Swamp, in the central part north of Allmond Pond and east of Magnet, and in the eastern part west of Benns Church. Very little of this soil is under cultivation. Most of it is in cut-over forest consisting of loblolly pine, shortleaf pine, maple, white oak, scarlet oak, and poplar. The wooded areas support very little undergrowth.

The 6- to 8-inch surface layer is light-gray or pale yellowish-gray loamy fine sand. This grades into very pale yellow or grayish-yellow loamy fine sand that extends to a depth ranging from 36 to 45 inches. The material in this layer has no definite structure and contains considerable moisture in the lower part of the layer. Below this is mot-

tled gray, yellow, brownish-yellow, and rust-brown fine sandy loam or fine sandy clay material, which includes small lenses or pockets of heavy fine sandy clay.

This soil occurs in close association with Norfolk fine sandy loam and Norfolk fine sandy loam, deep phase, and about the same fertilizer treatments are used as on Norfolk fine sandy loam, although yields of all crops are from 50 to 75 percent lower than on Norfolk fine sandy loam. Drainage at a depth of about 40 inches apparently is poor, although above this depth it is excessive. This soil occupies the more gently sloping banks of the drainageways and swamps.

Although the quality of peanuts, potatoes, and vegetables on this soil is good when the land is heavily fertilized, yields are low. This soil is not considered productive, owing to its open consistence and its inability to retain fertilizer and respond to other improvements.

Norfolk sandy loam.—Norfolk sandy loam occurs in very small areas in the vicinity of Allen School, northwest of Rushmere, and south of Stotts Crossroad. About 40 percent of the land is under cultivation. This soil is similar to Norfolk fine sandy loam in relief and development, but the texture of the surface soil and subsoil is coarse. The surface soil carries a high content of medium sand, some coarse sand, and some very fine rounded quartz gravel, which results in a more porous soil than Norfolk fine sandy loam. Noticeable quantities of coarse sand and very fine gravel are on the surface, but not enough to change the texture of the soil.

The 6- to 8-inch surface soil is yellow or pale grayish-yellow sandy loam. It is underlain by a layer of yellow or light-yellow sandy clay loam that extends to a depth ranging from 18 to 24 inches. This material gives way to yellow friable and crumbly sandy clay, which, at a depth of about 40 inches, is mottled with bright-red, rust-brown, and yellow splotches.

Owing to its small extent, this is not an important agricultural soil. The relief is undulating or gently rolling, and both external and internal drainage are good.

The same crops are grown as on Norfolk fine sandy loam. About 50 percent of the cultivated land is devoted to peanuts, about 30 percent to cotton, and the remainder to such crops as corn, potatoes, and garden vegetables. Under the same fertilizer treatment, yields are slightly lower than on Norfolk fine sandy loam, but such crops as peanuts and potatoes are equal in quality to the same crops grown on that soil.

Craven fine sandy loam.—The surface soil of Craven fine sandy loam consists of a 4- or 5-inch layer of gray or light-gray fine sandy loam underlain by pale-yellow fine sandy loam that extends to a depth of 8 or 10 inches. The subsoil, which continues to a depth ranging from 20 to 24 inches, is pale-yellow or yellow heavy somewhat plastic fine sandy clay or clay. Below this layer the material consists of mottled yellow, gray, rust-brown, and bright-red tough and plastic clay that continues to a depth of 50 or more inches. The subsoil and underlying material exposed in road cuts crack when dry or baked by the sun and do not crush readily like the subsoil of Norfolk fine sandy loam.

Craven fine sandy loam is somewhat similar to Norfolk fine sandy loam in the color of the surface soil and upper part of the subsoil. It differs from that soil mainly in the heavier texture of the subsoil and underlying material. Craven fine sandy loam in this county is very

susceptible to sheet erosion, even on undulating or gently sloping relief, and it is the most erodible soil of the light-colored well-drained group.

This soil occurs in close association with both the Norfolk and the Lenoir soils, occupying an intermediate position between the well-drained soil and the poorly drained soil. Where this soil is closely associated with the poorly drained Lenoir soils, the yellow clay subsoil is not so thick and the mottled soil material underlying the subsoil is closer to the surface than in the typical soil.

Craven fine sandy loam occupies small broken areas, generally on the slopes at the heads of small creeks and swamps. Areas are on the north side of Pope Swamp, west and southwest of Magnet, and in the vicinities of Rushmere and Shoal Bay in the northern part of the county, and small areas are near Carrollton and Battery Park in the northeastern part. About 35 percent of the land has been cleared for cultivation, and the rest is cut-over land supporting a forest growth of pines, gum, maple, hickory, white oak, and scarlet oak.

Corn, cotton, peanuts, and soybeans are the principal crops. Corn yields from 25 to 40 bushels an acre and generally is fertilized with 200 pounds of a 3–8–3 or a 4–8–4 mixture and a side dressing ranging from 75 to 100 pounds of nitrate of soda. Cotton yields from ½ to 1 bale an acre and is fertilized with 400 to 600 pounds of a 3–8–3 or a 4–8–4 mixture. Peanuts yield from 50 to 100 bushels an acre, but the quality is not so good as that of the peanuts grown on the lighter-textured soils or soils having a more sandy or lighter-textured subsoil. Sweetpotatoes are grown, and the best quality and largest yields are obtained on the areas with the deeper surface soil and better drainage. Soybeans and hay crops do well and return higher yields than those obtained on the Norfolk soils.

Craven very fine sandy loam.—Craven very fine sandy loam is not an extensive soil, and less than 20 percent of it is under cultivation. It occurs in the extreme northern part of the county on the peninsula between the James River and Lawnes Creek north and south of Rushmere, and a small area is in the southern part along the shores of Lees Millpond. Craven very fine sandy loam differs from Craven fine sandy loam in that both the surface soil and the subsoil are heavier textured and contain a greater proportion of fine material, such as very fine sand and silt. Compared with the fine sandy loam, this soil has a shallower surface soil and has suffered considerably more erosion. The color of the entire soil mass is darker yellow or more of a brownish yellow than that of Craven fine sandy loam, and the relief is smoother or flatter than in the better areas of that soil.

The forest growth on Craven very fine sandy loam is chiefly loblolly pine, with a few areas of hardwoods including white oak, scarlet oak, and maple. Where cultivated, about the same applications of fertilizer are made and about the same crops—corn, soybeans, hay, some peanuts, and some cotton—are grown as on Craven fine sandy loam. Corn, soybeans, and hay return about equal yields on the two soils, but peanuts and sweetpotatoes return lower yields and lower quality products on the very fine sandy loam than on the fine sandy loam. Craven very fine sandy loam is used for pasture to a considerable extent and supports a good cover of pasture grasses throughout a long growing season.

Marlboro fine sandy loam.—Marlboro fine sandy loam, which occupies comparatively small disconnected areas, is considered one of the strongest soils and is locally considered the best soil in the county for growing cotton. A small area is in the southern part about a mile north of Bradshaw Store; in the east-central part are several disconnected areas on both sides of Great Swamp; and in the northern part are small areas north of Stotts Crossroad and in the vicinities of Bethel Church and Magnet.

This soil is considered slightly better than the Norfolk soils for corn, cotton, and forage crops, and it is used for the production of the general farm crops. It is closely associated with the Norfolk soils but differs from them in having a slightly brown cast in the surface layer, in containing more fine material throughout the soil mass, and in having a deeper yellow or slightly reddish yellow and slightly heavier subsoil. It occurs in smooth, almost level, undulating, and gently rolling areas, and it is naturally well drained.

The surface layer, to a depth of 5 or 6 inches, is gray or grayish-brown fine sandy loam containing a small quantity of organic matter, which tends to give it a brown color. Underlying this layer, to a depth of 8 or 10 inches, is grayish-yellow or brownish-yellow mellow and light fine sandy loam. To a depth ranging from 25 to 30 inches, the subsoil is deep-yellow slightly sticky fine sandy clay, which rolls to some degree on the soil auger but crumbles readily when pressed between the fingers. The cut surface has a glazed appearance. Below this layer and continuing to a depth of 35 to 40 inches, the material is compact but friable bright-yellow clay loam mottled with light brown and gray. At a depth of 50 inches and extending to a depth of more than 65 inches, the material is mottled yellow, red, and gray fine sandy clay, which is more friable and crumbly than the material in the layer above.

The fertilizer treatment on this soil is about the same as that on Norfolk fine sandy loam. For corn, from 200 to 300 pounds an acre of 3–8–3 or 4–8–4 fertilizer, with a side dressing of 75 to 100 pounds of nitrate of soda, is used. In some places the side dressing of nitrate of soda is not necessary, owing to the ability of the soil to retain for a longer time the organic material that is turned under from cover crops and other organic sources. Yields of corn are slightly higher than those obtained on the Norfolk soils. Corn yields from 25 to 45 bushels an acre, and cotton from ¾ to 1¼ bales. Good yields of small-grain and hay crops are produced. Practically all of this soil is under cultivation.

Norfolk-Sassafras fine sandy loams.—Norfolk-Sassafras fine sandy loams include areas of Norfolk fine sandy loam and Sassafras fine sandy loam so intricately mixed that the two soils could not be separated on a small-scale map. These mixed soils occur in a narrow strip in the northeastern part of the county, extending from a point near the county line northeast of Wills Corner and continuing in a northwesterly direction to a point about 1 mile east of Smithfield. This strip lies along an escarpment or old shore line between the Dismal Swamp terrace and the Wicomico terrace.

This soil complex probably contains more Sassafras fine sandy loam than Norfolk fine sandy loam. The areas of Norfolk fine sandy

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loam are not essentially different from Norfolk fine sandy loam mapped in other parts of the county. The surface soil of Sassafras fine sandy loam, to a depth of 5 or 7 inches, is grayish-brown or brown mellow fine sandy loam containing some medium sand. It is underlain by light-brown or brown fine sandy loam, which in some places contains a small quantity of fragments of oystershells, and these may be present anywhere in the soil mass. The subsoil, extending to a depth ranging from 26 to 30 inches, is brown or reddish-brown friable fine sandy clay, which becomes somewhat lighter in color and texture in the lower part. It is underlain by slightly reddish brown fine sand or loamy fine sand, carrying a considerable quantity of fine gravel and coarse sand. The areas of Norfolk fine sandy loam and Sassafras fine sandy loam merge gradually into each other, and the color of the subsoil ranges from the yellow of the Norfolk to the reddish brown of the Sassafras.

Included with this complex soil is a small area of loamy sand situated along the James River at the old ruins of Fort Boykins. The soil is dark reddish-brown or dark-brown loamy sand to a depth of about 15 to 20 inches. It is underlain by brownish-yellow or light grayish-brown loamy sand, which continues to a depth ranging from 40 to 50 inches, where it passes into a layer of mottled gray, yellow, and brown loose incoherent sand or loamy sand.

The relief of Norfolk-Sassafras fine sandy loams ranges from almost level to undulating and very gently rolling and is characterized by small shallow depressions or sinkholes, which range from 1 to as much as 5 feet in depth. These depressions are well drained, except during times of extremely heavy rainfall, are cultivated across, and do not interfere with farming operations. All this land lies favorably for agricultural use, is naturally well drained, and is easy to till.

Practically all of this soil is under cultivation, and the yields obtained are as good as those on Norfolk fine sandy loam. High-quality peanuts and sweetpotatoes are produced on this soil, and good yields of corn and cotton are obtained. The fertilizer applications for the various crops are similar to those used on Norfolk sandy loam. Norfolk-Sassafras fine sandy loams are recognized as among the best soils of the county for the production of peanuts, sweetpotatoes, cotton, corn, and soybeans, when the land is properly fertilized. Internal drainage is exceptionally good, owing to the loose light-textured material underlying the subsoil.

LIGHT-COLORED POORLY DRAINED SOILS

The group of light-colored poorly drained soils includes all the soils of the Lenoir, Moyock, Onslow, and Bladen series and comprises an area of 107.7 square miles, or 34.3 percent of the total area of the county. Only a small proportion of these soils is under cultivation, and the rest supports a forest growth of loblolly and shortleaf pine, black gum, scarlet oak, some maple, and in most places a very thick undergrowth of bay, waxmyrtle, running briers, canes, and reeds. The light-colored poorly drained soils agriculturally are less important than the well-drained soils, and a different system of soil management is used on them by the farmers. The poorly drained soils are

well distributed over the entire county, and they occupy the higher flat ridges between the small drainageways and swamps. The largest areas are in the northwestern part, in the vicinities of Mill Swamp Church, Four Square, Stotts Crossroad, and Moonlight. Smaller areas are in the southern part east of Franklin, in the east-central part around Windsor and String of Logs Pocosin, and in the northeastern part along the flat areas paralleling the James River.

The main crops produced on these soils are corn, soybeans, small grains, and hay, although some cotton and peanuts are grown. Considerable revenue is realized from the timber cut, and the small acreage of the county devoted to pastures is on these soils. Good pasture is obtained through a long grazing season and materially aids the dairy farmers.

The relief of these soils ranges from the broad smooth flat areas of the Bladen soils to the undulating and very slightly rolling areas of the Lenoir, Moyock, and Onslow soils. The Bladen and Lenoir soils occupy the high elevations of the broad flats, and the Moyock and Onslow soils occupy the slightly sloping areas adjacent to the well-drained light-colored soils. In order to obtain the best yields from these soils, artificial drainage is necessary, and the better yields are obtained from the areas that have been improved or drained. Open ditches and canals are used in draining these soils, and ditches and canals are maintained at a comparatively low cost, as the heavy character of the subsoils prevents the filling in of the ditches, so that the walls of the ditches stand up remarkably well. All these soils are acid and are somewhat deficient in organic matter, although they are naturally more fertile so far as plant nutrients are concerned than the soils of the well-drained group.

These soils have light-colored surface soils ranging in texture from fine sandy loam to silty clay loam. The subsoils are heavy, plastic, tough, and sticky clays in the Bladen and Lenoir soils and fine sandy clay in the Moyock and Onslow soils.

Lenoir fine sandy loam.—Lenoir fine sandy loam is distributed over all the county in large irregular-shaped bodies, the largest of which are in the vicinity of Sycamore Crossroads, at Stotts Crossroad, at Four Square, at Stokes School, at Ross Pocosin, at Windsor, and in the vicinity of Maynards Crossroads. This soil occupies an intermediate position, in regard to drainage and the character of the subsoil, between the well-drained Craven soils and the poorly drained Bladen soils.

The relief ranges from comparatively flat to gently undulating. Drainage on the flatter areas is very poor, but surface drainage is better on the slightly sloping areas. Open ditches are necessary to carry off excess rain water from the cultivated areas. Internal drainage is poor, and naturally this is a late soil that does not warm readily in the early spring.

The 4- to 6-inch surface layer consists of gray or grayish-brown fine sandy loam that becomes light gray or slightly yellowish gray in cultivated fields. Underlying this layer is grayish-yellow, mottled with brown, sticky fine sandy loam extending to a depth ranging from 8 to 12 inches. The subsoil is mottled pale-yellow, gray, and brown sticky fine sandy clay extending to a depth of 15 to 18 inches. It grades into heavy, tough, sticky clay that is light gray, mottled with yellow, brownish yellow, and in places light red, and which is hard when dry and sticky when wet. Below a depth ranging

from 35 to 40 inches the gray color predominates, although some mottles of yellow and brown are present.

From 20 to 25 percent of this soil is under cultivation. The crops grown are corn, soybeans, small grains, hay, and some cotton and peanuts. The average yields of corn and soybeans are higher with the same fertilizer applications and under like cultural methods than those obtained on the Norfolk soils. Corn yields range from 20 to 40 bushels an acre with a fertilizer application ranging from 200 to 300 pounds of a 3–8–3 or 4–8–4 mixture. Cotton yields from less than one-half to three-fourths of a bale an acre, and it is generally fertilized with from 300 to 500 pounds of 3–8–3 or 4–8–4. The yield of cotton depends considerably on the length of the growing season and the amount of rainfall throughout this season, as a late spring or an early fall materially reduces the cotton yields on this soil. Peanuts, mainly the Spanish variety, when grown on this soil, are given about the same fertilizer applications as on the better drained soils, and the yields in many places are higher, but the quality is not so good and the price is proportionately reduced. Peanut yields range from 50 to 70 bushels an acre when the land is fertilized with 300 to 500 pounds of 2–8–4 just before planting time and an application of 300 to 600 pounds of land plaster at blooming time. Soybeans yield high, as do several hay crops, and pastures are far better and afford a longer grazing season than do pastures on any other soil in the county.

Included with the soil as mapped are small areas in the northeastern part of the county in the vicinity of Benns Church, in which the surface soil is browner than typical and the subsoil is grayish brown. The soil in these areas contains some fine sand and very fine sand. At a depth of about 40 inches it is a heavy, tough, and somewhat brittle bluish-gray or brownish-gray clay. In surface appearance, profile development, crop yields, and drainage, this included soil is about the same as typical Lenoir fine sandy loam.

Lenoir very fine sandy loam.—Lenoir very fine sandy loam occurs in fairly large areas, in close association with Lenoir fine sandy loam. In the northern part of the county there is an area east of Moonlight and several areas in the vicinity of Carrollton, north of Rushmere, and east of the ruins of Fort Boykin; in the southern part, a small body is north of Allen School and a larger one east of Lees Mill. This is not an important agricultural soil, as most of it is in forest composed chiefly of loblolly pine, black gum, white gum, scarlet oak, and some maple.

Lenoir very fine sandy loam is similar in color to Lenoir fine sandy loam, but the texture is heavier throughout the surface soil and the subsoil. In most places the surface soil is shallower and is much finer in texture, giving a rather smooth feel when rubbed between the fingers. As the surface soil contains considerable very fine sand and silt, it has a tendency to clod if plowed shortly after a rain. The subsoil is heavy, tough, and in some places plastic clay, which lies within a depth of 6 inches from the surface.

Areas of this soil are level or slightly undulating, and the land is poorly drained, being only slightly better drained than the Bladen soils. It is well adapted to pasture grasses and hay crops, but yields of corn, soybeans, and small grains are less than on Bladen fine

sandy loam, probably owing to the poorer internal and external drainage. When this soil is cultivated, the same fertilizer applications and the same cultural methods are used as on Lenoir fine sandy loam.

In the northeastern part of the county, the surface soil is browner and the subsoil is more brittle and less plastic. In this same section, small areas containing more silt in the surface soil, having a shallower surface soil, and having a subsoil that does not extend to so great a depth as the subsoil of typical Lenoir very fine sandy loam, are included in mapping. These small bodies are Lenoir silt loam, are very poorly drained, and none of them is cultivated.

Lenoir silty clay loam.—With the exception of an area northeast of Franklin and west of Bradshaw Store, Lenoir silty clay loam occupies small broken areas in the northeastern part of the county. Very little of this land has ever been cleared and farmed, and most of the once cleared and cultivated land is now idle. This is due to the fact that this soil, because of its extremely heavy character, is exceptionally hard to manage, as crops often drown out, and cultivation is difficult with the light farm implements commonly used. The soil supports an excellent growth of loblolly pine, scarlet oak, black oak, maple, and cedar, and an extensive undergrowth of myrtle, briers, holly bushes, and canes. Some of the best stands of loblolly pine in the county are on this soil.

The topmost 2-inch layer of Lenoir silty clay loam is dark-gray silty clay loam containing a slight amount of organic material. This passes into a layer of silty clay loam that is mottled gray and yellow with brown splotches, having a platy structure, and extending to a depth ranging from 8 to 16 inches. Below this layer is mottled yellow and brownish-yellow clay loam or clay, containing splotches of gray and light gray. The material breaks into irregular fragments from ½ to 1 inch in diameter and extends to a depth ranging from 20 to 30 inches, where it grades into mottled gray and yellowish-red heavy fine sandy clay or clay, containing some bright-yellow splotches, which is tough and resistant when rubbed between the fingers. In some places both the surface soil and the subsoil have a very distinct brown cast. In the areas having a brown surface soil, drainage is not so good as in the areas of lighter color, and the mottlings are more pronounced in the upper part of the subsoil.

The land ranges from flat to slightly undulating. Both internal and external drainage are very poor. The only revenue obtained from this soil is from the sale of timber. Cut-over land and second-growth forest areas are used for hog pastures. None of this soil is under cultivation.

Lenoir sandy loam.—The surface soil of Lenoir sandy loam, to an average depth of 8 inches, is light-gray or yellowish-gray sandy loam containing small quantities of silt and clay, which give it a rather sticky feel. Below the surface layer and continuing to a depth of about 18 inches is light-yellow or yellow somewhat heavy sandy loam containing some rust-brown and bright-yellow splotches. The subsoil, to a depth of 35 inches, consists of heavy mottled yellow, gray, and rust-brown sandy clay loam or clay, which in places becomes very sticky. The underlying layer is mottled gray and yellowish-gray sticky sandy clay, which is always wet under normal moisture conditions.

This is not an extensive soil. It occurs in a fair-sized area about a mile southeast of Broadwater Bridge on the Blackwater River. Very little of the land is under cultivation. The same fertilizer applications are made, and the same yields are obtained as on Lenoir fine sandy loam.

The relief is slightly more sloping, and drainage, both internal and external, is slightly better than for Lenoir silty clay loam and Lenoir very fine sandy loam. Much of this sandy soil is used as surfacing material on sand-clay roads.

Moyock fine sandy loam.—The 6- to 8-inch surface soil of Moyock fine sandy loam consists of dark-gray fine sandy loam containing considerable organic matter. In wooded areas a thin layer of decayed leaves and grass is on the surface. Although the soil dries to a considerably lighter color in cultivated fields, its characteristic grayish-brown cast readily distinguishes it from other soils. Beneath the surface soil and continuing to a depth of about 20 inches is brownish-yellow or gray slightly sticky fine sandy loam mottled with brownish yellow and light gray. The subsoil has no definite structure; it has a rather mealy feel when rubbed in the hands and crushes readily to a friable mass. Beneath this layer and extending to a depth of about 40 inches is gray sticky loose fine sandy loam or lenses of clay mingled with fine sand, mottled with brownish yellow and brown. This material is very wet and incoherent.

This soil occurs in rather large bodies north and south of Windsor, at Central Hill, and in the northeastern part of the county around Carrollton.

Moyock fine sandy loam has a relief ranging from almost level to gently rolling. The structure of this soil would indicate that both internal and surface drainage would be good, but, owing to the more or less flat relief, internal drainage is poor.

Because of its favorable relief, about 50 percent of this soil is cleared for cultivation. Where the land is artificially drained by open ditches, crop yields are only slightly less than those obtained on the well-drained soils. Fertilizer treatments are about the same as are applied on Norfolk fine sandy loam, and the crops grown are the general crops of the county—corn, peanuts, cotton, soybeans, small grains, and hay. In an adjacent county this soil is used extensively for the production of truck crops on a commercial scale, and one of the best trucking sections of the Norfolk district is on this soil. Very few truck crops are grown on a commercial scale in Isle of Wight County.

Moyock fine sandy loam, flat phase.—Moyock fine sandy loam, flat phase, differs essentially from typical Moyock fine sandy loam in relief and drainage. It occurs in close association with typical Moyock fine sandy loam but is developed farther away from the streams or on the flats on the broader divides. Its relief is almost level or undulating, and both surface and internal drainage are poor. All areas of this soil require artificial drainage in order to reclaim them for agricultural use.

The surface soil is somewhat darker, that is, it is more brown or dark gray, and the subsoil is lighter than the corresponding layers of typical Moyock fine sandy loam. In texture and structure the surface soil is not materially different from that of the typical fine sandy loam. The light-gray color of the subsoil of this flat land is due to poor aeration and oxidation as a result of poor drainage.

Moyock fine sandy loam, flat phase, is developed in the northeastern part of the county and in many places is surrounded by typical Moyock fine sandy loam. The largest area of the flat soil lies about 2 miles south of Windsor, and small bodies are in the vicinity of Carrollton.

Only a very small part of the land is under cultivation, and the crops grown are corn and soybeans. The rest of the land supports a second growth of pine, various oaks, and a dense undergrowth of gallberry, waxmyrtle, briers, canes, and reeds. Agriculturally this soil is not important.

Moyock sandy loam.—Moyock sandy loam occupies very small scattered areas in various parts of the county. Some of the largest are about 2 miles east and southeast of Zuni, south and southwest of Smithfield, and about 3 miles southeast of Benns Church. A large proportion of the land is under cultivation to such general farm crops as corn, peanuts, soybeans, and hay.

The 6- to 8-inch surface soil is grayish-brown sandy loam containing a small percentage of coarse sand and very fine gravel. It is underlain by sandy loam, brownish yellow slightly mottled with pale yellow and gray, which continues to a depth ranging from 20 to 24 inches. Below this is mottled gray and brownish-yellow heavy fine sandy clay that is rather plastic and sticky. This heavy layer extends to a depth ranging from 30 to 40 inches and is underlain by loose and incoherent gray or yellowish-gray sandy loam or heavy fine sandy loam.

The relief is level to slightly undulating, and drainage is not so good as in typical Moyock fine sandy loam, although it is better than in Moyock fine sandy loam, flat phase.

Crop yields are about the same, under the same fertilizer applications and cultural methods, as those obtained on Moyock fine sandy loam and Lenoir fine sandy loam.

Onslow fine sandy loam.—Onslow fine sandy loam in cultivated fields is light-gray fine sandy loam to a depth of 6 or 8 inches. In wooded areas the topmost 3- or 4-inch layer is dark gray, owing to the presence of a small content of organic matter. It is underlain by a so-called hardpan layer of dark-brown fine sandy loam or fine sand cemented by iron or organic material. The hardpan layer ranges in thickness from about 1 inch to 4 inches, and it varies considerably in hardness, ranging from soft to hard. Below the stained or hardpan layer, and continuing to a depth ranging from 35 to 40 inches, is fine sandy clay, pale grayish yellow, mottled with brown, with a pale-green or olive-green cast. In most places the lower part of this layer is wet under normal conditions. The subsoil is friable and crumbly when dry but slightly sticky when wet. It grades into lighter textured material, light-gray or brownish-gray fine sandy loam or loamy fine sand, mottled with rust brown and bright yellow. In cultivated fields, where the so-called hardpan layer was originally within plow depth, it has been broken up and small brown rounded and subangular soft to hard concretions or pebbles are on the surface and mixed with the soil. Locally, areas of this soil do not have the so-called hardpan layer but have the typical subsoil of Onslow fine sandy loam as mapped elsewhere.

Included with Onslow fine sandy loam as mapped is an area of Onslow loamy fine sand, about 2 miles southeast of Franklin. Here the surface layer is gray or slightly brownish gray loamy fine sand,

which, at a depth of about 6 or 8 inches, is underlain by dark-brown loamy fine sand slightly cemented with organic matter. Below this layer is grayish-yellow, faintly mottled with brown, loamy fine sand, which, at a depth ranging from 30 to 36 inches, becomes lighter in color and texture and shows considerable mottling of gray and rust brown. None of the included Onslow loamy fine sand is under cultivation, but it supports a forest growth, mainly of loblolly pine, together with some hickory, gum, maple, and oaks.

The relief of Onslow fine sandy loam ranges from almost flat or undulating to gently rolling. Some of the areas are well drained, and others are only fairly well drained. On the flatter areas artificial drainage is essential, in order to carry off the excess water.

This soil is distributed over the southern and central parts of the county, the largest areas occurring around Carrsville and Ballards Crossroads. Smaller areas are in the vicinity of Antioch Church, east and south of Windsor, and southeast of Ross Pocosin.

About 30 percent of Onslow fine sandy loam is under cultivation, and the remainder is forested to loblolly pine, together with some hickory, gum, maple, and various oaks. Peanuts, potatoes, corn, and soybeans are the principal crops, and yields of these crops on the well-drained areas, where liberal applications of fertilizer are made, compare favorably with yields obtained on Norfolk fine sandy loam. This is considered a good general-purpose soil and a soil that is easy to till, owing to its friable consistence and favorable texture.

Bladen fine sandy loam.—Bladen fine sandy loam occurs in all parts of the county in fairly large disconnected areas, the largest being in the String of Logs Pocosin in the central part of the county and south of Windsor. Smaller bodies are in the northern part of the county in Belle Meadow Pocosin and near Septa.

In wooded areas the surface soil to a depth of 2 inches is very dark gray fine sandy loam containing a slight quantity of organic matter, but in cultivated fields the surface layer is grayish brown. It is underlain by light-gray heavy fine sandy loam slightly mottled with yellow and rust brown, extending to a depth of 10 or 12 inches. Below this layer, and continuing to a depth ranging from 30 to 34 inches, is steel-gray or slightly brownish gray heavy plastic clay mottled with rust brown and brownish yellow. The material in this layer is soft and wet throughout the entire year under normal rainfall, and the passage of water through the heavy clay is very slow. Underlying this and extending to a depth of 50 or more inches are unconsolidated lenses of heavy clay intermingled with heavy fine sandy loam. Over the surface are numerous small pools of standing water, and surface drainage is extremely poor owing to the very flat relief.

About 20 percent of this soil is under cultivation, and the remainder is forested to gum, maple, and pine, with a thick undergrowth of waxmyrtle, reeds, briers, and canes. The principal crops grown are corn, soybeans, and hay, and some cotton and peanuts are produced. Corn yields are as high as on any soil in the county. They range from 25 to 45 bushels an acre. Corn is given a fertilizer application ranging from 200 to 400 pounds to the acre of 3–8–3 or from 200 to 300 pounds of 4–8–4. Cotton yields are variable, depending on the length of the growing season and the quantity of rainfall. Peanut

yields are large, but the quality, particularly noticeable in the dark color of the shell, materially reduces their market value. Good pastures are obtained on this soil, and hay yields are above the average for the county. When the agricultural conditions of the county require an increase in the acreage of pasture, large areas of Bladen fine sandy loam, which now have a rather low cash value, would be excellent sites for dairy farms. Bladen fine sandy loam is inherently a good soil, and more of it could be brought under cultivation by drainage.

Bladen fine sandy loam in the northeastern part of the county has a slightly darker brown cast throughout the entire soil mass, is more brittle in the subsoil, and is not so plastic when wet. The movement of water in this soil in this part of the county is not so good as in other parts.

Bladen silt loam.—Bladen silt loam occupies scattered areas over all sections of the county, the largest being in the center of the String of Logs Pocosin. Areas occur along the county line in the northern part, east of Moonlight, in the vicinity of Four Square, and west and southeast of Windsor.

The 4- to 6-inch surface layer of Bladen silt loam consists of dark-gray or gray heavy loam or silt loam, which clods considerably in cultivated fields and dries to a very light gray color. When crushed and rubbed between the fingers this soil has a powdery or smooth feel. Underlying the surface layer, and extending to a depth of 12 or 14 inches, is gray or slightly brownish gray silt loam or silty clay loam, which is smooth and moderately mellow and friable. Beneath this and continuing to a depth ranging from 36 to 40 inches is the subsoil of silty clay or clay, which is heavy, plastic, tough, and in some places brittle, and is light-gray mottled and streaked with rust brown and yellowish brown. It gradually passes into heavy impervious gray clay containing few mottles of brown and extending to a depth of more than 60 inches.

Both internal and external drainage of this soil are very poor, and the relief is flat and level. Very little of the land has been cleared for cultivation, and a large acreage that was formerly cultivated is now lying idle. Artificial drainage is necessary for successful crop production. Where the land is drained, good yields of corn, soybeans, and hay are obtained and excellent pastures are maintained. By artificial drainage and the growing of green-manure crops to be turned under, this soil should produce large yields of such crops as are suited to a heavy soil, as it is inherently one of the most fertile soils of the county. At present, the best use that can be made of this soil is forestry. If some drainage is provided it can be used for pasture.

MISCELLANEOUS SOILS AND LAND TYPES

The group of miscellaneous soils and land types includes all the soils not included in the other groups, namely, Norfolk fine sand; Norfolk sand; Norfolk fine sandy loam, slope phase; Ruston fine sandy loam, slope phase; Plummer fine sandy loam; Portsmouth fine sandy loam; and Kalmia fine sand; and in addition the land types classed as alluvial soils, undifferentiated; swamp; tidal marsh; tidal marsh, high phase; and coastal beach.

The miscellaneous soils for the most part either are inherently poor, have steep relief, or are poorly drained. Only small areas of Norfolk fine sand, Norfolk sand, Norfolk fine sandy loam, slope phase, and Ruston fine sandy loam, slope phase, are under cultivation. These soils, under present economic conditions, are best suited to forestry. Portsmouth fine sandy loam, if drained and limed, would produce good yields of corn and truck crops, but Plummer fine sandy loam is best suited to forestry and pasture.

The miscellaneous land types in all probability will remain in their present condition until the demand for farming land is greater. Alluvial soils, undifferentiated, and swamp areas are well suited to the growing of cypress. Tidal marsh affords scant pasture for cattle, and tidal marsh, high phase, now supports a growth of small pines. Coastal beach has no agricultural value.

Norfolk fine sand.—The 3-inch surface layer of Norfolk fine sand is light-gray (almost white) fine sand containing only a slight amount of organic matter in the topmost inch, which causes a darker gray color. It is underlain by pale-yellow or yellow loose fine sand. This layer extends to a depth of about 15 inches. It is underlain by yellow or slightly grayish yellow loose fine sand, which becomes lighter in color at the bottom of the layer and extends to a depth of about 45 inches, where it passes gradually into grayish-yellow fine sand streaked with light brown and bright yellow and continues to a depth of more than 70 inches.

About 1½ miles northwest of Blackwater School is a small area of Leon fine sand, which has been included with Norfolk fine sand in mapping, owing to its small extent. This soil consists of gray fine sand to a depth of 3 or 4 inches. It is underlain by almost white loose fine sand that continues to a depth of about 20 inches. This is underlain by a brown or dark-brown so-called hardpan layer from 2 to 4 inches thick, consisting of fine sand cemented with organic matter. Underlying this dark-colored layer is gray loose fine sand, which in most places is saturated with water. This soil supports a fairly good growth of loblolly pine and an undergrowth of gallberry, huckleberry, and a few other small plants.

Norfolk fine sand occupies small areas in nearly all parts of the county, such as the bodies 1 mile northwest of Wills Corner, 1 mile south of Proctors Bridge, 3 miles west of Stotts Crossroad, 1 mile west of Muddy Cross, and 2 miles east of Shoal Bay. The larger areas occur along the Blackwater River around Zuni, west of Walters, and east and southeast of Franklin.

Practically all of Norfolk fine sand either is in forest or has been cut over and is now reforesting itself to loblolly and old-field pine, together with a few scrub oaks. The small areas farmed are utilized mainly for the production of corn and peanuts, and a small acreage is in cotton. Yields are low except where large applications of commercial fertilizer have been made. Because of the fine texture and mellow condition of this soil, moisture conditions are better than on Norfolk sand but not so good as on Norfolk loamy fine sand. It is difficult to build up and maintain this soil in a productive state. At present, forestry seems to be the best use for it.

Norfolk sand.—Norfolk sand is one of the less extensive soils in the county. It occupies small areas in various parts, such as those

1 mile southeast of Fort Boykin, 2 miles northeast of Wills Corner, at the northern county line north of Pons, and in the southern tip of the county south of Franklin.

The 6- to 8-inch surface layer consists of light-gray sand. In wooded areas it is darker gray in the topmost few inches, owing to coloration from organic matter. Underlying the surface layer is pale-yellow loose sand extending to a depth of more than 60 inches. The lower part of this layer has a light yellowish-gray or gray color.

This soil is inherently poor in mineral plant nutrients and organic matter, and none of it is cultivated. Owing to the loose and incoherent character of both the surface soil and the subsoil, it would be very difficult to build up and maintain in a productive condition. At present it supports a good stand of second-growth forest, and forestry is the best use that could be made of it. Much of the sand is used in concrete mixing and in road surfacing.

Norfolk fine sandy loam, slope phase.—The soil has a profile similar to that of typical Norfolk fine sandy loam, but both surface soil and subsoil are much shallower. The 3- or 4-inch surface layer is light-gray or grayish-yellow fine sandy loam. It is underlain by pale-yellow or yellow light fine sandy loam that extends to a depth of 8 or 10 inches. The subsoil is yellow or pale reddish-yellow friable and crumbly fine sandy clay that extends to a depth ranging from about 20 to 32 inches, below which the material is mottled light-gray, light-red, and reddish-yellow slightly compact and slightly sticky but friable fine sandy clay extending to a depth ranging from 4 to 5 feet.

The surface of this soil is very broken, being dissected by many gullies and short intermittent drains, and in many places the surface soil has eroded entirely. These areas were at one time under cultivation. This soil occurs along the sharp breaks of the streams throughout the county. It has a slope ranging from about 15 percent to as much as 30 percent. None of the land is under cultivation but supports a good growth of loblolly pine, sycamore, some willow, scarlet oak, and hickory. The forest growth includes some merchantable timber but not in large areas, and most of it is used as farm wood lots. If cleared and devoted to clean-cultivated crops, sheet erosion would soon remove the soil. Forestry is the best use for this soil at present.

Ruston fine sandy loam, slope phase.—This soil occupies a position similar to that of Norfolk fine sandy loam, slope phase, bordering the streams and drainageways. The largest areas are about 1½ miles west of Smithfield, and in the northeastern part of the county near the James River.

The 2-inch surface layer is gray or slightly grayish white loamy fine sand or fine sandy loam, which is underlain by grayish-yellow loamy fine sand or fine sandy loam extending to a depth of about 15 inches. Below this is reddish-brown friable fine sandy clay loam that crumbles readily. When dry, this material becomes hard and brittle, and when wet it is slightly plastic. This layer extends to a depth of about 30 inches, where it passes into brownish-red sandy clay mottled with pale yellow, red, and gray, which in some places contains streaks of yellow sand.

None of this soil is under cultivation, but it is forested to various oaks, loblolly pine, maple, sycamore, hickory, and beech. Erosion is very active, and deep gullies have been cut on the 15- to 30-percent

slopes. The surface is very broken and irregular. Deep ravines have cut back from the main drainageways, and in many places none of the surface soil remains. The best use for this soil is forestry.

Plummer fine sandy loam.—The 4- to 6-inch surface layer of Plummer fine sandy loam is dark-gray fine sandy loam or loamy fine sand. It is underlain by light-gray fine sandy loam mottled with light brown, extending to a depth of about 15 inches. Below this layer is light-gray or yellowish-gray fine sandy loam mottled with brown or dark brown, and at a depth of about 25 inches the soil material is mottled yellow and gray fine sandy loam or fine sandy clay. Below this is gray loamy fine sand having the character of quicksand, which will not adhere to a soil auger. This soil is very wet throughout the soil mass and is called quicksand by many farmers. In some places the topmost 10-inch layer contains considerable organic matter.

None of Plummer fine sandy loam is in cultivation, but it supports a good second growth of pine and gum. At present it should not be cleared, as it is very unproductive, but it should be left in its forested condition.

This soil occupies comparatively small areas at and north of Boaz, northwest of Line Pine School, and northwest of Blackwater School. Its total area is very small, and the soil is unimportant agriculturally.

Portsmouth fine sandy loam.—Portsmouth fine sandy loam occupies smooth areas adjacent to streams and drainageways, southeast of Franklin, about 1 mile west of Carrville, west of Bradshaw Store, northwest of Line Pine School, and south of Windsor.

Very little of this soil is under cultivation, and most of it is in second-growth forest. The 12-inch surface soil is very dark gray or black fine sandy loam containing a large quantity of organic matter, which gives it a smooth slick feel. A layer, about 1 inch thick, of partly decomposed forest litter covers the surface. Below the surface soil and extending to a depth of about 36 inches is mottled gray and brownish-yellow soft, sticky, and very wet fine sandy clay or fine sandy loam, which is very friable. This soil is known locally as a quicksand soil. It occupies low flat depressions, generally within areas of well-drained soils.

Portsmouth fine sandy loam is not an important agricultural soil, and if cultivation were attempted, artificial drainage would be necessary. In other counties in this vicinity, some areas of this soil have been drained and good yields of corn and soybeans are obtained after liming and proper applications of fertilizer. This soil is also used in other localities for the production of truck crops, good yields of which are reported.

Kalmia fine sand.—This soil occupies second-bottom or terrace positions along the Blackwater River in the western part of the county. The relief ranges from flat or level to slightly undulating, and both internal and external drainage range from good to excessive. This soil occupies small areas and is not important agriculturally, as none of it is cultivated and it all supports a forest growth of gum, sycamore, pine, and scarlet oak.

The surface soil of Kalmia fine sand is light-gray or grayish-yellow fine sand extending to a depth ranging from 6 to 12 inches. It is underlain by pale-yellow or yellow loose and incoherent fine sand

that extends to a depth of 40 or more inches. In a few places, the subsoil contains light-brown and gray mottlings in the lower part of the layer.

Included with Kalmia fine sand in mapping are small areas of Kalmia fine sandy loam and Kalmia silt loam, which are too small to be mapped separately. These soils resemble Norfolk fine sand in many respects, but they have a smoother feel when rubbed between the fingers, and the materials are more uniform in texture.

Alluvial soils, undifferentiated.—Alluvial soils, undifferentiated, occur mainly in narrow strips along the upper parts of the small streams and branches. They represent a soil condition rather than a definite soil type. The material varies considerably in texture, structure, and color, the texture ranging from clay loam to fine sand and the color from gray to dark gray or almost black. These undifferentiated alluvial soils lie at a very slight elevation above the surface of the stream and frequently are flooded. They support mainly a growth of gum and pine, although a few spots have been cleared for pasture. None of the land is cultivated. The best use of this land is for forestry or summer and fall pasture.

Swamp.—The classification of swamp includes all the low-lying alluvial first bottoms along the fresh-water rivers and larger streams. It is a soil condition with no definite texture and is subjected to standing water and swampy conditions throughout the year. The topmost few inches consist of dark-gray or black sandy loam, loam, or clay. Underlying this layer is light-gray material, mottled with yellow, rust brown, and yellowish brown, ranging in texture from sandy loam to silty clay loam.

Swamp occupies long narrow strips, ranging in width from several hundred feet to more than 1 mile. These areas are not cultivated, and hog pastures along the edges are the only grazing areas. Swamp-land supports almost pure stands of cypress and gum, and these are being logged continuously for marketable timber. Some of the larger areas of swamp occur along the Blackwater River in the western part of the county, and other areas are Kingsale and Corrowaugh Swamps in the southern part, and Burnt Mills, Pope, Great, and Rattlesnake Swamps in the central and northwestern parts.

At present there is no reason for reclaiming the swamps for agriculture, and the work of reclamation might prove unsatisfactory, owing to the very low elevation of the areas. The best use that could be made of them is to leave them as they are, in forest.

Tidal marsh.—Areas of marshy land lying practically at sea level and subject to tidal inundation are classed as tidal marsh. This land type is composed of gray, dark-gray, or grayish-brown slick silty material containing decomposed organic matter and large quantities of coarse grass in various stages of decomposition. At a depth of about 12 inches is mottled gray or grayish-brown soil material, which in general is heavier than the surface layer and contains less organic matter. At a depth ranging from about 30 to 40 inches the soil material is bluish-gray, gray, or slightly grayish brown silty clay that is somewhat heavy and plastic.

Tidal marsh has no agricultural value, and it supports no tree growth, but it has a cover of coarse water grass, which in early spring affords some pasture for cattle. In some places the grass is cut, cured,

and used for packing material. Owing to the heavy growth of this grass, it affords excellent resting and feeding grounds for game birds, such as wild ducks, in their migrations.

Tidal marsh occupies low flat areas bordering the tidal streams. It is covered daily by salt water and is saturated the year round. The largest areas are in the northeastern part of the county along the Pagan River and on Ragged Island.

Tidal marsh, high phase.—The high phase of tidal marsh represents areas that are slightly higher than the adjacent tidal marsh. It ranges in elevation from 1 to 5 feet above normal tide and is slightly better drained than typical tidal marsh. It has characteristics common to both typical tidal marsh and the higher lying Lenoir soils. The areas of tidal marsh, high phase, are not so extensive as areas of the typical marshland. The land supports a scant growth of pine and live oak trees, with an undergrowth of gallberry, wax-myrtle, briers, and some coarse grasses.

The 10-inch surface soil ranges from fine sandy loam to silt loam and silty clay loam, and it contains considerable organic matter. Below this layer is bluish-gray or slightly grayish brown fine sandy clay or clay, which is very plastic, sticky, and wet. The subsoil resembles very closely the subsoil of the Bladen soils. Areas of the high phase of tidal marsh stand out as low islands or bars, which are very noticeable and are surrounded by typical tidal marsh or low marshland. Most of the areas are on Ragged Island.

Coastal beach.—Coastal beach is composed chiefly of sand, ranging from fine to coarse, and it contains some fine gravel. It occupies a very narrow strip along the James River, extending from the Pagan River to the mouth of Lawnes Creek. This strip in some places is not more than 50 feet wide and in other places is as much as 500 feet. This land, which is being deposited and shifted by wave action, consists of loose grayish-yellow or yellow sand containing oystershells and fragments of shells on the surface and to a depth ranging from 30 to 40 inches. At this depth the sand is somewhat lighter in color than the overlying sand.

The relief ranges from almost level to gently sloping and billowy, and the elevation ranges from water level to 10 feet above. Coastal beach, as mapped in this county, has no agricultural value, supports no pasture or forest growth, and is used chiefly as road-surfacing material. Most of the bathing beaches are on this sand, and they afford recreation for residents in nearby areas.

LAND USES AND AGRICULTURAL METHODS[6]

The agriculture of Isle of Wight County comprises chiefly the production of corn, cotton, peanuts, watermelons, and soybeans and the raising of hogs. Practically all of the better farms produce vegetables for home consumption and a small quantity for sale on local markets, along with small fruits, melons, and other products for home and local use. The shipment of watermelons, grown on the

[6] Information for this section is furnished by T. B. Hutcheson, professor of agronomy and supervisor of college farm, Virginia Polytechnic Institute; E. T. Batten, superintendent, Nansemond County Station, Holland, Va.; P. H. DeHart, county agent, Isle of Wight County; J. B. Hester, soil technologist, Virginia Truck Experiment Station.

well-drained soils around Smithfield, is an important agricultural development, and much revenue is brought into the county yearly by the sale of these melons. Hog raising over the entire county is one of the the sources of revenue. Most of the hogs are sold to the meat packers in Smithfield, Suffolk, and Franklin. The meat business in the town of Smithfield amounts to more than $1,000,000 a year. The production of sweetpotatoes, although it declined for a number of years, now is increasing and shows a tendency toward a still further increase in the future. A few new sweetpotato storage houses are being built in the county, and the sale of sweetpotatoes is becoming one of the chief sources of revenue on a few farms. Cotton, peanuts, corn, and soybeans are grown in rotation. The better farmers are using more and more winter cover crops, such as crimson clover, rye, and barley, which serve the double purpose of reducing winter leaching of the plant nutrients and affording some winter and early spring pasture.

Improved methods and practices are very much in evidence throughout the county, and the use of commercial fertilizer and green-manure crops is increasing rapidly. Where necessary, control of erosion is practiced, and the better farmers are making great efforts to improve the soil and bring it up to its maximum productivity.

Experiments on soils similar to those in this county have been carried on at the Nansemond County Station at Holland, and from the results obtained from these experiments recommendations are made which are applicable to the soils in Isle of Wight County.

The following recommendations are made for the crops grown on light-colored well-drained soils, such as the Norfolk, Craven, and Marlboro, and these same recommendations apply also to the dark-colored poorly drained soils of the Moyock and Onslow series in places where these soils have been drained artificially for cultivation. Cotton, corn, and peanuts are grown in rotation, corn being seeded to rye in October, and cotton seeded to crimson clover in August and September, or after the last cultivation or the first picking. Corn should be fertilized with 300 to 400 pounds an acre of 2–12–6 and side dressed with 150 to 200 pounds of nitrate of soda or its equivalent of sulfate of ammonia. One-half of the side dressing should be applied when the plants are 18 inches high and the remaining half at the last cultivation. For cotton, fertilizer recommendations are 500 to 800 pounds of 4–10–6 at planting time and 100 pounds of nitrate of soda and 20 pounds of potash as a side dressing at chopping time or about June 1, especially on the deeper and more sandy soils, such as Norfolk fine sandy loam, deep phase, and also on other soils when the fertility is low. For peanuts, 500 pounds of 2–8–10, 0–14–6 or 0–12–12 should be applied at the time the plants emerge from the soil.

It has been observed that if the potash in the fertilizer is derived from low-grade salts, trouble with germination develops, but if derived from concentrated salts it should be used just before planting. In growing peanuts, if the soil is slightly acid or has a pH value of less than 6.0, it should be top-dressed with 200 to 400 pounds of land plaster any time before the plants have reached their maximum growth, generally about August 1. In general soybeans

are not fertilized, but when they are, the same applications of fertilizer as for peanuts are used for soybeans, also for lespedeza, with the exception of the top dressing of land plaster. Land for sweetpotatoes should receive from 800 to 1,000 pounds an acre of 3–3–15 between the rows after the plants have started growth. Land for small grains should receive from 300 to 400 pounds an acre of a 2–12–6 mixture.

The following rotation is recommended when cotton is grown on the light-colored poorly drained soils, such as the Lenoir and Bladen. In a 2-year rotation of cotton and corn interplanted with soybeans, the cotton should be seeded to crimson clover or some small grain in the fall, for grazing the following spring. If a 3-year rotation is desired, the following is recommended: First year, corn interplanted with soybeans; second year, cotton followed by crimson clover; third year, small grains or soybeans seeded alone to be harvested for hay, grain, or seed.

It has been found necessary to lime the light-colored poorly drained soils in order to maintain a pH value of 6.0 to 6.5, which is the pH value that gives the best results on nearly all crops in this county. About 1,500 pounds of ground limestone, or its equivalent of hydrated lime, once in a 4-year rotation will bring best results. If peanuts are grown in the rotation, the liming should be done before the peanuts are planted.

When watermelons, which are a rather important cash crop, are worked into the rotation of cotton, corn, and soybeans, the following recommendations are made, in order to obtain best results in the cultivation of watermelons. They should be grown on the light-textured or sandy soils, such as the Norfolk, Craven, and Marlboro, and should be fertilized with from 500 to 1,000 pounds an acre of a 5–8–5 or a 3–8–10 mixture.

As most of the soils of this county are almost flat or level to undulating and gently rolling, the control of erosion is not an important factor in agriculture. Light implements, such as one-horse plows and other light equipment used in shallow plowing and cultivation, are all that are necessary, as many of the soils are of sandy loam texture. On some of the farms on the heavier soils, such as the Bladen and Lenoir, heavier equipment is required, some tractors are used, and deeper plowing is necessary.

All artificial drainage is done by the open ditch and canal method, the open ditches being perpendicular laterals to the main drainage canals. In a few places tile drainage has been attempted and proved successful. For general farming, however, tile drainage is much more expensive than the open-ditch method.

Varieties of the different crops recommended for Isle of Wight County and crops that have proved satisfactory at the Nansemond County Station are as follows: White varieties of corn are Virginia White Dent and Latham Double; yellow varieties are Clarage, Golden Queen, and Reid Yellow Dent; cotton varieties are Trice No. 2 and Farm Relief No. 2; peanut varieties are Jumbo, Virginia Bunch, and Spanish; varieties of soybeans are Haberlandt No. 38, Mammoth Brown, and Tokyo; for hog grazing the two varieties of

lespedeza recommended are used together in a mixture of 3 parts of Korean and 1 part of Kobe; the favorite variety of sweetpotato is Porto Rico; and varieties of watermelons are Thurmond Grey and a variety locally known as Owens Grey.

The boll weevil and the cotton leaf worm are found to some extent in cotton crops, but the infestation is not so great as in some of the States farther south. Other diseases of cotton are rust and, to some extent, wilt. Leaf spot is the chief disease of peanuts, and frequently the potato leafhopper also attacks this crop. Fusarium wilt is the most common disease of watermelons, and the only means of combating it is to use disease-resistant varieties of seed, such as the Australian Thurmond Grey. For insect infestation of watermelons it is recommended that they be dusted with bordeaux mixture D–16 or D–20. This dust should be applied at the time of emergence of the plant and should be continued until runners have formed.

Although truck farming is not practiced on a commercial scale in this county, home gardens, through the cash derived from the sale of surplus truck crops, are a source of considerable revenue. The soils suitable for truck cropping and the proximity of the county to the Norfolk metropolitan area make truck-cropping potentialities very good. On this basis the following recommendations were obtained from the Virginia Truck Experiment Station at Norfolk.

A fertilizer with a high nitrogen content, medium phosphorus, and medium potash, is recommended for such crops as spinach, kale, collards, turnip greens, Swiss chard, early cucumbers, broccoli, brussels sprouts, loose leaf lettuce, endive, early beets, and celery. These vegetables should receive an application of a 6–6–5 fertilizer before planting and a side or top dressing of 9–5–4. The quantity applied should range from 1,000 to 2,000 pounds an acre, depending on the crop. Such vegetables as potatoes, head lettuce, beets, carrots, eggplant, cabbage, peppers, and early snap beans should receive a 6–6–5 fertilizer ranging from 1,000 to 2,000 pounds an acre, depending on the crop. Snap beans, lima beans, peas, tomatoes, watermelons, squashes, onions, and sweet corn should receive applications of fertilizer, such as 4–8–5, 4–10–5, and 3–10–6, ranging from 1,000 to 2,000 pounds an acre, depending on the crop. Lima beans do not require such a heavy application but should receive from 500 to 1,000 pounds. Snap beans should be side dressed with nitrate of soda during the early blooming period.

Table 5, compiled from data received from the Virginia Truck Experiment Station, gives the planting date, harvesting date, fertilizer mixtures and acre application, and optimum pH range for truck crops grown in this county.

TABLE 5.—*Planting and harvesting dates and other data for truck crops grown in Isle of Wight County, Va.*[1]

Crop	Planting date [2]	Harvesting date	Fertilizer		Optimum pH range
			Composition [3]	Acre application	
				Pounds	
Asparagus	March to April	April to May	5-8-5	1,000	6.0-6.5
Snap beans	Mar. 15 to Aug. 15	May to November	5-8-5	500 to 1,000	5.5-6.5
Lima beans	May 1 to Aug. 1	July to November	5-8-5	500 to 1,000	5.5-6.5
Beets	Feb. 15 to May 15	May to August	6-6-5	1,000	6.0-6.5
	Aug. 15 (fall)	November to December			
Broccoli	July	October to January	[4] 6-6-5	2,000	5.5-6.5
Cabbage	June to July	October to November	[4] 6-6-5	2,000	5.5-6.5
	September (spring)	April to July			
Carrots	Feb. 15 to Apr. 30	May to September	6-6-5	1,000	5.5-6.5
	August (fall)	November to December			
Celery	Dec. 1 to Jan. 15	June to July	[4] 6-6-5	2,000	6.0-6.5
Collards	July 15 to Aug. 15	October to December	[4] 6-6-5	2,000	5.5-6.5
Cucumbers	Mar. 15 to Apr. 15	June to August	[4] 6-6-5	1,000	5.5-6.5
Eggplant	January	July to November	[4] 6-6-5	2,000	5.5-6.5
Kale (Scotch)	July to August	September to May	[4] 6-6-5	2,000	5.5-6.5
Lettuce	March (field)	May to June	6-6-5	2,000	6.0-6.5
	August (fall) (field)	October to November			
Cantaloups	Apr. 1 to Apr. 30	July to August	6-6-5	1,000	6.0-6.5
Onion sets	Jan. 1 to Mar. 15	April to August	4-10-5	2,000	6.0-6.5
Peas	Feb. 15 to Apr. 1	April to July	3-8-5	1,000	6.0-6.5
	Sept. 1	October to November			
Peppers	Feb. 1 to Feb. 28	July to November	6-6-5	1,000	5.5-6.5
Potatoes	Feb. 1 to Apr. 1	June to Aug. 1	6-6-5	2,000	5.0-5.4
	July 1 to Aug. 1	November			
Sweetpotatoes	Mar. 15 to Apr. 1	September to November	3-3-15	1,000	5.0-5.5
Radishes	Jan. 15 to Mar. 15	March to May	6-6-5	1,000	5.5-6.5
Spinach	Sept. 1 to Feb. 1	October to May	[4] 6-6-5	2,000	6.0-6.5
Tomatoes	Feb. 1 to June 15	June to November	3-10-6	1,000	5.5-6.5
Turnip greens	Sept. 1 to Apr. 1	November to June	[4] 6-6-5	1,000	5.5-6.5
Strawberries	Feb. 15 to Apr. 15	May to July	6-6-5	[5] 1,000	5.5-6.5

[1] Prepared by M. M. Parker, horticulturist, Virginia Truck Experiment Station.
[2] These dates are approximate. Climatic conditions, soil types, and the purposes for which the crop is grown will modify the time of planting.
[3] Percentages, respectively, of nitrogen, phosphoric acid, and potash. The mixture to use and the quantity to be applied will differ with the fertility of the soil, type of soil, time of year in which the crop is growing, and general climatic conditions.
[4] Apply the 6-6-5 before planting and side-dress or top-dress with a fertilizer high in nitrogen, such as a 9-5-4, or with soluble nitrogen salts, as nitrate of soda, sulfate of ammonia, or Cal-Nitro.
[5] Fall.

Most of the soils are acid,[7] and frequent applications of lime will prove very profitable for most of the crops grown. All the light-colored well-drained soils are deficient in organic matter, and such cover crops as vetch, soybeans, cowpeas, and clovers, to be grown and turned under, would greatly increase the production on any of the soils. By turning under such cover crops, the nitrogen content in ready-mixed fertilizers may be reduced. Deep plowing is not necessary on the light-textured soils, but on the heavy-textured soils deeper plowing should be practiced and the soil thoroughly pulverized by harrowing before the seed is sown. The dark-colored heavy soils, which are inherently the most fertile soils in the county, are not productive, owing to their poor drainage; but when proper artificial drainage is applied to these soils, large crop yields are obtained. Artificial drainage systems are easily maintained, owing to the heavy character of the subsoils of the Bladen and Lenoir soils. The walls of the ditches stand up exceptionally well, and the ditches require little attention other than clearing of weeds and small bushes.

Wild onions are becoming a serious pest through the entire county, and their eradication should be accomplished as quickly as possible.

[7] See table 7 giving pH values, on p. 38.

Hog raising for the production of pork is an important agricultural activity and is one of the chief sources of revenue. As a general practice, crops for pork production should be produced on the light-colored poorly drained soils, as such soils are well adapted to the growing of lespedeza for pasture. Pasture recommendations for the soils are that the soil be disked in the fall and seeded to small grains, such as rye, oats, and barley, for spring pasture; to crimson clover, for April and May pasture; and to lespedeza, which comes in about June, for the best summer pasture.

Table 6 gives the various crops that can be used in eastern Virginia for hog grazing, the usual planting date, usual grazing period, and the average carrying capacity of each crop, or the average number of hogs that can be grazed on an acre of each crop.

TABLE 6.—*Date of planting, grazing period, and carrying capacity of various crops*

Crop	Planting date	Grazing period	Average number of 150-pound hogs[1] an acre
Maintenance crops:			
Oats:			
Fall	October 1 to October 15	March	3.5
Spring	February 15 to March 1	April 1 to June 1	3.0
Rye	September 15 to November 1	January 1 to April 1	3.5
Crimson clover	August 15 to October 15	February 1 to May 15	5.5
Lespedeza	February 15 to March 1	June 15 to November 1	10.0
Rape	do	April 1 to June 15	6.3
Finishing crops:			
Early corn and beans	April 15	August 15 to October 1	6.5
Soybeans	April 15 to May 1	June 15 to September 1	5.0
Late corn and beans	April 15 to May 15	September 1 to November 1	6.5
Wheat or barley	September 15 to October 15	June 15 to August 1 (grain)	5.0
Sweetpotatoes	May and June	October to November	12.0

[1] The number of hogs supported on an acre varies with the stand of the crop, the season, and the fertility of the soil. These figures are for average, or normal, conditions.

The following list of publications is included for reference, for persons desiring more detailed information applying to the agriculture of Isle of Wight County than is given above: Virginia Agricultural Experiment Station Bulletins 229, Experiments with Cotton and Peanuts and Crops Grown in Rotation with Them in Nansemond County: 284, Experiments with Lime, Fertilizers, and Varieties of Field Crops in the Cotton and Peanut Section of Virginia; and 218, Peanut Culture; and Virginia Agricultural College Extension Bulletin 86, Cotton Production in Virginia.

FORESTS [8]

The forests of Isle of Wight County, as they relate to the soils and their use, may be classed in three main groups as follows: The extensive loblolly pine forests of the level uplands, the cypress and hardwood forests of the swamps and bottom lands, and the mixed hardwood forests characteristic of the steep-sided ravines and breaks between the level uplands and the bottom lands.

The pine forests are the most important, both in regard to the area involved and the value of the product. They are also the only forests

[8] This section was written by Wilbur O'Byrne, extension forester, Virginia Polytechnic Institute.

that enter into any important land use problem. The swamps and bottom lands are too inextensive and too wet to be suitable for agricultural use, and the land in the ravines and breaks not only is inextensive but is too steep for agriculture. Loblolly pine (*Pinus taeda*) is the dominant tree and grows in almost pure stands over extensive areas. A few scattered specimens of Virginia (spruce) pine (*P. virginiana*) and shortleaf pine (*P. echinata*) grow on the drier sites, but nowhere do they make up a significant part of the forest.

The quantity of hardwood growth varies with drainage and past use of the land. As a rule, the largest number of hardwoods grow on the moister soils and the smallest number on abandoned farm land. White oak is the characteristic hardwood on the drier soils; and yellow poplar, red gum, black gum, willow oak, red maple, and sourwood are prominent in the tree growth on the pocosins and other poorly drained areas.

It seems probable that the original forest on the uplands was similar in composition to that of today. The pines were larger and older and had the smooth yellow bark characteristic of original growth. Hardwoods were probably more plentiful than in present old-field stands, but fewer than in the usual second-growth forest following logging. For all practical purposes the upland forests may be regarded as pine forests, and management should endeavor to keep them so.

The swamp forests are confined to narrow strips of bottom land bordering streams. Where water remains throughout the year, cypress makes up the entire stand but gives way to gums, ash, red maple, swamp oak, hickory, elm, birch, and sycamore as drainage improves. Much of this bottom land is not recognized as soil in a technical sense but is made up of soil material that has washed in from a distance and has not been in place long enough to develop true soil characteristics. The organic content is high, and where drainage is adequate tree growth is rapid.

The hardwood forests of the ravines and breaks are a mixture of trees characteristic of fertile soils. Beech, yellow poplar, and bitternut hickory are the more numerous species, with elm, white oak, and walnut on the better drained areas and sweetgum, black gum, sycamore, red maple, and birch where the soil is more apt to be wet. Walnut thrives in these ravines, and because of its value it should be encouraged to make up a larger proportion of the mixture. Other trees worth favoring are yellow poplar and white oak. The other species are distinctly inferior but are aggressive and should be held in check. The chief value of the ravine forests arises from their small area and the availability of useful, if not locally valuable, trees.

There is little to choose among the upland soils in regard to their ability to produce timber, as they all are capable of growing good pine and growing it rapidly, so that the principal question is that of the most profitable use. Soils best fitted for agriculture because of adequate drainage are also the easiest to manage for the production of timber; not because the trees grow better, but because the land supports less underbrush with which to contend. The Norfolk soils include the best drained soils and (except the deep sands) are generally regarded as the most desirable for agricultural use. The Ruston soil for the most part is forested, because of its position and its rough relief, whereas most of the areas of Norfolk-Sassafras fine sandy loams, on

the other hand, lie well and are practically all cleared. The Craven soils also belong in the well-drained group, but they occur in small areas and in many places occupy the slopes of ravines and drainageways. They are strong soils and make ideal sites for such exacting species of trees as walnut and yellow poplar. The last soil of the well-drained group is the Kalmia, which is confined to a narrow strip adjacent to the river banks. It is a deep sand of alluvial origin and has excessive drainage. Pines thrive well in the deep sand but have suffered more from fire than on most soils. These frequent fires have a tendency to convert the pine forests to post oak forests, probably owing to the ability of the oak to sprout after having been killed back by fire.

The Onslow and Moyock soils are intermediate as to drainage and are largely cleared for use in general farming. Artificial drainage is necessary in most places but generally is easy. Timber growing on these soils is largely a question of the most profitable use of the land. The quality of the timber grown is high, but, as forestry is a less intensive land use than cultivation, only those areas that cannot be farmed profitably, because of their location or some other local condition, should be used in the production of timber.

The Bladen and Lenoir soils are grouped together because all are heavy and poorly drained. The members of both series are cultivated to some extent, but they require artificial drainage. Loblolly pine does well but is forced to compete with a heavy undergrowth. The tallest and heaviest timber observed in this county was growing on the Lenoir soils, and that on the Ruston soil seemed to average definitely shorter, but it is possible that these differences are more the result of past treatment than of any inherent differences in the soils.

The feasibility of growing trees for lumber and other forest products must be considered in the light of recent agricultural history and of industrial developments. If, as we are assured, a surplus of land is in cultivation, it would be unwise, for the present at least, to extend the area of cultivated land, with the exception of comparatively small areas that may be needed to increase the operating efficiency of farms. This is particularly true of soils requiring a considerable outlay of cash for drainage before they can be farmed. On the other hand, pine trees grow rapidly, they reseed themselves readily if given a chance, and they have a steady market close at hand.

One large lumber company, which operates partly within the county, has been handling its own forest land on the basis of selective logging and continuous operation for several years. As this is written, a pulp and paper plant is being erected by the same interests. Both of these plants will draw a part of their requirements from their own lands but will probably buy an even larger amount from the farmers of this and adjacent counties. Thus the farmers of a large part of the county have at their door an unusually good market for both large and small timber—an ideal situation for the profitable practice of forestry.

It is not sufficient, however, for the farmer merely to let his trees grow, but he must grow them, as he must grow any crop if it is to be profitable. He must see to it that this forest land is fully stocked with sound, thrifty trees of desirable species, and he must keep them growing as rapidly as is consistent with quality. And when he har-

vests the matured crop he must follow a cutting plan that will insure prompt establishment of desirable young growth to take the place of the trees being harvested.

With the information in regard to the soils of the county made available in this report, landowners can study their holdings critically and classify each acre according to its most profitable use. Those areas set aside as forest land may then be organized and handled for the systematic production of whatever products seem to hold out the greatest promise. Where areas of considerable size are involved, commercial forests seem to be entirely feasible; but where the areas are small and form integral parts of operating farms, they can generally be operated to best advantage as a side line to the farming operations. Over a part of the county the production of game, especially deer and turkeys, might be made a profitable side line to the growing of trees. The important thing, however, is to have a plan and then stick to it. A knowledge of the soils and their capabilities is essential for such a plan.

MORPHOLOGY AND GENESIS OF SOILS

Isle of Wight County lies in the northern part of the Red and Yellow Podzolic soils region. It ranges in elevation from sea level to 90 feet above. A large part of the county has undulating to very gently rolling relief, but comparatively large flat areas maintain their constructional form as laid down by the sea. These latter areas have not been invaded by drainageways.

The soils have developed under forest cover, and most of them are very deficient in organic matter. In the wooded areas the surface has a thin covering of forest litter consisting mainly of pine needles and leaves from deciduous trees, and the surface soil, to a depth of 2 or 3 inches, is darkened by an admixture of organic matter. The surface soils range from light gray to very dark gray or black, and the subsoils from yellow and reddish yellow to gray and mottled. The dark-gray or black soils have remained in a wet or semiswampy condition for a long time, and luxuriant vegetation has flourished on them. All the soils range from acid to very strongly acid. Table 7 gives the results of pH determinations of several soil profiles from this county.

TABLE 7.—*pH determinations*[1] *of several soil profiles in Isle of Wight County, Va.*

Soil type and sample No.	Depth	pH	Soil type and sample No.	Depth	pH
Norfolk fine sand:	*Inches*		Craven fine sandy loam:	*Inches*	
212601	0–3	4.0	212633	0–4	5.8
212602	3–15	4.8	212634	4–8	5.2
212603	15–44	4.6	212635	8–20	4.7
212604	44–70+	5.1	212636	20–50+	4.7
Onslow fine sandy loam:			Norfolk fine sandy loam:		
212622	0–8	3.9	212637	0–2	4.2
212623	8–11	4.1	212638	2–8	4.8
212624	11–35+	4.3	212639	8–26	4.6
			212640	26–50+	4.8

[1] Determinations made by E. H. Bailey by the hydrogen-electrode method.

This county has a mild temperature and a comparatively heavy rainfall. Active leaching of the soluble plant nutrients, and also

of organic matter, is active throughout the greater part of the year, as the ground is seldom frozen except to a depth of a few inches for short periods. Erosion is noticeable on some areas of the Norfolk, Ruston, and Craven soils that occupy gently sloping or gently rolling areas and have been under clean cultivation for a long time. On the steeper slopes, such as the slope phases of the Ruston and Norfolk soils, geologic erosion is pronounced, but these soils have not undergone serious surface or gully erosion, owing to the fact that such areas have not been cleared of their vegetal growth.

The parent materials underlying the soils consist of unconsolidated beds of sands, sandy clays, and clays, which have no uniform color, texture, or structure. The sands and sandy clays, through the soil-forming processes, give rise to the Norfolk, Ruston, Onslow, Moyock, and Marlboro soils. The heavier parent materials, such as sandy clays and clays, underlie the Craven, Lenoir, and Bladen soils. A direct relationship exists between the parent materials and the B horizons of the various soils, and also the drainage conditions. The soils having the more friable B horizons and also the more uniform color throughout the profile are underlain by the more friable unconsolidated sands and sandy clays.

The soils of this county occur on two marine terraces, the lower terrace, in the eastern part of the county, being known as the Dismal Swamp terrace, and the higher terrace, in the central and western parts, as the Wicomico terrace. Generally, on the Dismal Swamp terrace, which lies at a lower elevation than the Wicomico terrace, the relief is flat, drainage is poor, and the B horizons are dominantly heavier in texture. In places, numerous oystershells and fragments of shells are scattered over the surface and through the solum.

Drainage, next to parent material, has been a controlling factor in the development of the soils of this county. The soils with normally developed profiles are Norfolk fine sandy loam, Norfolk sandy loam, Marlboro fine sandy loam, and Ruston fine sandy loam. These soils, together with Norfolk sand, Norfolk fine sand, Norfolk loamy fine sand, Norfolk fine sandy loam, slope phase, and Ruston fine sandy loam, slope phase, constitute the best drained soils in the county. A large number of soils—the Lenoir, Bladen, Plummer, and Portsmouth—do not have normally developed soil profiles, owing to imperfect drainage.

Norfolk fine sandy loam, which is the dominant soil of the county, represents the mature soil of this general region. Following is a description of a profile of this soil, as observed 4 miles south of Benns Church near the Isle of Wight-Nansemond County line in a cut-over forested area:

A_1. 0 to 2 inches, gray fine sandy loam containing a small quantity of organic matter, beneath a thin covering of forest litter on the surface.

A_2. 2 to 12 inches, grayish-yellow light-textured fine sandy loam with a single-grain structure, containing very little organic matter.

B_1. 12 to 15 inches, yellow heavy fine sandy loam, which constitutes gradational material between the A and B horizons.

B_2. 18 to 32 inches, yellow friable and crumbly fine sandy clay, which contains some root channels that have been filled with gray material from the A horizon.

C. 32 to 50 inches, mottled light-gray and yellowish-brown slightly compact but friable fine sandy clay. The greater part of this layer becomes lighter in texture and color with depth. It grades below a depth of 50 inches into unconsolidated fine sand and fine sandy clay.

Ruston fine sandy loam, slope phase, seems to be a further development of Norfolk fine sandy loam. It differs mainly from the Norfolk soil in that the B horizon is reddish yellow or light reddish brown. The C horizon is very similar to that underlying the Norfolk soils, except that it lies farther below the surface soil, indicating a much lower water table.

The Craven soils have developed under approximately the same drainage conditions as the Norfolk soils, but they are less mature. This immaturity is influenced to some extent by the difference in the original material, as the parent material of the Craven soils is much heavier than that of the Norfolk soils. The profile of the Craven soils differs mainly from that of the Norfolk soils in the heavier texture of the B horizon, which consists of yellow heavy clay that is somewhat plastic when wet and on drying becomes very hard and cracks. The lower part of the B horizon is mottled brownish-yellow, gray, or brown heavy tough clay.

Marlboro fine sandy loam differs from Norfolk fine sandy loam in containing more fine material throughout the solum, thus giving it a slightly heavier texture, and it also has a more intense yellow color in the B horizon.

The Moyock soils are characterized by the absence of any definite structural condition throughout the profile, and the color differs considerably from place to place. The Onslow soils have a brown slightly compact layer, or so-called hardpan, of fine sandy material or fine sand cemented by colloidal organic matter and a small quantity of iron. This brown layer apparently has developed at the top of the water table and is, therefore, not the equivalent of the ortstein occurring in the Podzols of the northern regions.

Lenoir fine sandy loam may be considered as having intermediate drainage between the poorly drained heavy-textured soils and the well-drained light-textured soils. Following is a description of a profile of Lenoir fine sandy loam as observed 2 miles northeast of Pons:

A_1. 0 to 2 inches, gray fine sandy loam containing a small quantity of organic matter and having a very thin covering of forest litter on the surface.

A_2. 2 to 8 inches, grayish-yellow fine sandy loam, mottled with gray and brown, having a slight brown cast in the upper part.

B_1. 8 to 23 inches, grayish-yellow, mottled with light gray and brown, heavy tough clay loam or clay.

B_2. 23 to 40 inches, mottled gray, brownish-yellow, and some light-red heavy tough clay. The material is plastic when wet and on drying becomes very hard and cracks.

The Bladen soils differ essentially from the Lenoir soils in having slightly darker surface soils and steel-gray or light-gray, mottled with brownish yellow, heavy plastic clay or fine sandy clay subsoils. The Bladen soils are naturally poorly drained.

The Portsmouth soils differ from the Bladen soils in having a black surface soil, a subsurface layer of light gray, and a mottled light-gray, yellow, or brown sandy clay subsoil.

Mechanical and chemical analyses of Norfolk fine sandy loam and Portsmouth fine sandy loam, collected in eastern North Carolina, may apply equally well to these soils in Isle of Wight County.

The mechanical analysis[9] of Norfolk fine sandy loam located 3 miles north of Bests, Wayne County, N. C., is given in table 8. Two outstanding features are shown by these data: (1) The extent to which the clay has been transferred from the A horizon to both the lower horizons and (2) the uniform content of silts and sands in the three horizons. This latter fact becomes obvious when the percentages of the silts and sands are figured on a clay-free basis. The large quantity of this coarser material and its uniform distribution throughout the profile, together with the low water table, no doubt have contributed to the transfer of the clay from the upper part of this soil.

TABLE 8.—*Mechanical analysis of Norfolk fine sandy loam*[1]

Sample No.	Horizon	Depth	Fine gravel (2–1 mm.)	Coarse sand (1–0.5 mm.)	Medium sand (0.5–0.25 mm.)	Fine sand (0.25–0.1 mm.)	Very fine sand (0.1–0.05 mm.)	Silt (0.05–0.005 mm.)	Clay (0.005–0 mm.)	Colloid (0.002–0 mm.)	Organic matter by H_2O_2
		Inches	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
C294	A	0–12	1.7	6.6	9.9	25.9	17.8	28.4	8.9	4.9	0.07
C295	B	12–34	1.0	5.1	7.7	20.4	14.0	22.7	28.8	23.5	.02
C296	C	36–80	1.2	4.8	7.9	19.7	13.7	21.3	31.3	30.1	.00

[1] Determinations by T. M. Shaw and E. F. Miles.

Table 9 gives the chemical analyses of the three horizons of the Norfolk soil profile. The variations in this soil profile are characteristic of a mature profile developed under good drainage and oxidation. This is evidenced by the structure, color, and location of the clay, as pointed out in the description of the soil and by its mechanical analysis. The chemical data given in table 9 show a pronounced transfer of the major constituents from the A horizon to the lower horizon, as indicated by decrease of silica and increase of sesquioxides. The nature of this transfer is better interpreted from the subsequent data on the colloidal fraction of this soil (table 10). The whole soil has a very low yet uniform content of the minor constituents.

TABLE 9.—*Chemical analysis of Norfolk fine sandy loam*[1]

Sample No.	Horizon	Depth	SiO_2	TiO_2	Al_2O_3	Fe_2O_3	MnO	CaO	MgO	K_2O	Na_2O	P_2O_5	SO_3	Ignition loss	pH	N	Organic matter
		Ins.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*		*Pct.*	*Pct.*
C294	A	0–12	94.26	1.01	2.08	0.69	0.01	0.07	0.03	0.03	0.01	0.01	0.01	1.67	5.1	0.02	0.89
C295	B	12–34	82.67	1.14	8.87	3.18	.01	.08	.02	.07	.01	.02	.02	3.64	4.6	.03	.40
C296	C	36–80	78.99	1.05	11.03	4.45	.02	.01	.05	.02	.03	.01	.03	4.18	4.6	.02	.24

[1] Determinations by G. Edgington.

The data presented in table 10 show that the colloids of the three horizons of the Norfolk soil profile have about the same content of both the major and minor constituents, with the exception of organic matter.

[9] HOLMES, R. S., HEARN, W. E., and BYERS, H. G. THE CHEMICAL COMPOSITION OF SOILS AND COLLOIDS OF THE NORFOLK AND RELATED SOIL SERIES. U. S. Dept. Agr. Tech. Bul. 594, 33 pp., illus. 1938.

TABLE 10.—*Chemical analysis of the colloid of Norfolk fine sandy loam*

Sample No.	Horizon	Depth	SiO_2	TiO_2	Al_2O_3	Fe_2O_3	MnO	CaO	MgO	K_2O	Na_2O	P_2O_5	SO_3	Ignition loss	Organic matter
		In.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*
C294	A	0–12	35.97	1.23	32.14	10.70	0.01	0.35	0.58	0.52	0.18	0.10	0.12	17.83	4.65
C295	B	12–34	37.54	1.10	34.41	12.41	.01	.50	.52	.53	.27	.10	.11	14.03	1.06
C296	C	36–80	38.73	.90	34.10	11.97	.01	.28	.42	.30	.20	.07	.09	14.29	.77

Table 11 gives the results of mechanical analyses[10] of samples of Portsmouth fine sandy loam collected 1½ miles southeast of Southwood School, Lenoir County, N. C., and shows the Portsmouth profile to be much lower in both colloid and silt than other members of this group of soils. The colloid is lowest in the surface horizon, which no doubt is the result of eluviation. The data for the lower horizons, however, indicate that this was lateral instead of vertical. The large quantities of sand in this soil profile give it a rather loose, porous structure, which would be conducive to a deep, well-drained, and aerated soil if it were not for the high water table. The effect of this high water table and of anaerobic conditions doubtless has much to do in determining the character of the colloid.

TABLE 11.—*Mechanical analysis of Portsmouth fine sandy loam*

Sample No.	Horizon	Depth	Fine gravel (2–1 mm.)	Coarse sand (1–0.5 mm.)	Medium sand (0.5–0.25 mm.)	Fine sand (0.25–0.1 (mm.)	Very fine sand (0.1–0.05 mm.)	Silt (0.05–0.005 mm.)	Clay (0.005–0 mm.)	Colloid (0.002–0 mm.)	Organic matter by H_2O_2
		Inches	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
C308	A	0–15	0.8	5.1	7.2	33.6	21.3	19.2	6.7	3.0	6.0
C309	B	15–35	.9	4.2	5.9	30.4	21.6	21.6	15.2	11.1	.2
C310	C	50–60	1.0	6.2	8.8	34.9	19.4	14.2	15.3	11.9	.2

The data for the chemical analysis of this soil, given in table 12, together with the data of table 13, show the sands and silts reported in table 11 to consist almost wholly of quartz, as is largely true of all these related soils. The surface soil is slightly more acid (pH 4.1) than that of the Bladen soils, a difference that may be ascribed to the somewhat higher organic content. The lower horizons are about the same (pH 4.3 to 4.4) as the Bladen soils. These low pH values are the result of the practically complete removal of bases from the profile. This is also shown by the chemical composition, these values probably being the lower limit for normal soils. The high organic content of the surface soil is an indication of approach to peaty conditions, which would arise were the water table slightly higher or more constant. The anaerobic conditions developed during wet periods doubtless account for the almost complete absence of iron and manganese in this profile.

[10] See footnote 9, p. 41.

TABLE 12.—*Chemical analysis of Portsmouth fine sandy loam*

Sample No.	Horizon	Depth	SiO_2	TiO_2	Al_2O_3	Fe_2O_3	MnO	CaO	MgO	K_2O	Na_2O	P_2O_5	SO_3	Ignition loss	pH	N	Organic matter
		In.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*
C308	A	0–15	90.39	0.77	1.69	0.35	0.01	0.11	0.01	0.01	0.01	0.04	0.06	6.82	4.1	0.12	7.00
C309	B	15–35	91.52	.99	4.36	.95	.02	.16	.01	.07	.02	.01	.02	1.71	4.3	.02	.19
C310	C	50–60	91.98	.79	4.26	.73	.01	.12	.02	.03	.01	.01	.01	1.85	4.4	.02	.34

TABLE 13.—*Chemical analysis of the colloid of Portsmouth fine sandy loam*

Sample No.	Horizon	Depth	SiO_2	TiO_2	Al_2O_3	Fe_2O_3	MnO	CaO	MgO	K_2O	Na_2O	P_2O_5	SO_3	Ignition loss	Organic matter
		Inches	*Per-cent*	*Per-cent*	*Per-cent*	*Per-cent*	*Per-cent*	*Per-cent*	*Per-cent*	*Per-cent*	*Per-cent*	*Per-cent*	*Per-cent*	*Per-cent*	*Per-cent*
C308	A	0–15	33.50	1.92	22.23	2.09	0.02	0.41	0.15	0.19	0.19	0.08	0.21	39.38	30.98
C309	B	15–35	45.27	3.63	33.78	2.30	.01	.12	.16	.30	.18	.06	.13	14.06	2.35
C310	C	50–60	46.54	2.57	32.00	3.71	.01	.19	.28	.46	.31	.09	.16	14.24	2.34

Table 13 gives the chemical composition of the colloid of the three horizons of the Portsmouth profile. These data show that the colloid in the three horizons is virtually uniform in inorganic composition. The composition of the colloid in the A horizon differs sharply from that in the B and C horizons by reason of its high organic content. The soluble and leaching effect of water is shown by its low content of exchangeable material, and the inorganic colloid may be regarded perhaps as being largely a single clay complex.

SUMMARY

Isle of Wight County, situated in the southeastern part of Virginia in the Atlantic Coastal Plain, is in what is known as the cotton and peanut belt of Virginia. The surface ranges from broad, level, and undulating on the flats to gently rolling, sloping, and steep in areas along the watercourses. The county is drained by the Blackwater River on the west, the James River and the Pagan River on the north, and by secondary drainage of the Nansemond River on the east. The total area is 314 square miles, or 200,960 acres. The county is only a short distance from Hampton Roads Harbor and the Norfolk section of Virginia.

The area included in this county was one of the first settled by the English in the early history of the United States. It is on the opposite side of the James River from the site of the historic settlement of Jamestown, made in 1607.

The county has fair railroad and good water transportation, and good highways traverse all sections. Telephone communications are good over the entire county, and electric power is obtainable in the more densely settled sections.

The climate is oceanic; the winters are mild, and the summers are cooled by breezes from Chesapeake Bay and the James River. The temperature ranges from −15° to 104° F., but the mean temperature

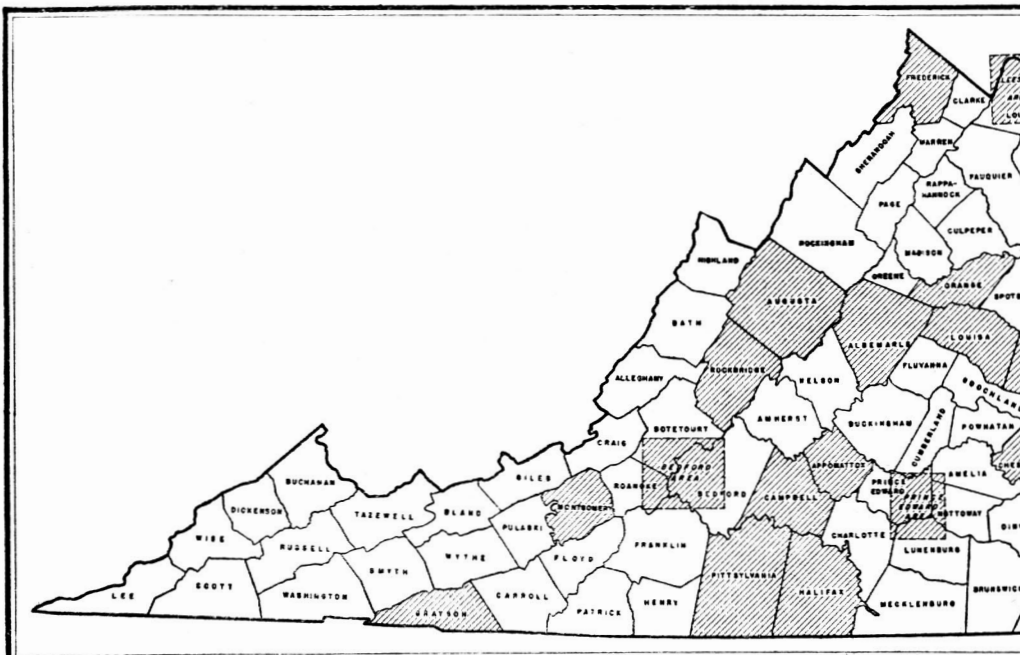
for the year is 57.9°. The annual rainfall is 48.98 inches, and the average snowfall is 13.6 inches.

The agriculture consists principally of the production of corn, cotton, peanuts, hogs, sweetpotatoes, and truck crops for home use. Soybeans and hay crops also are produced. Corn, cotton, peanuts, and hogs are the principal products sold for cash. The town of Smithfield, the home of the Smithfield ham, does an annual business of more than $1,000,000 in the meat-packing business. The county is one of the leading hog-producing counties of the State, and most of the hogs are sold locally or in nearby markets. Corn, cotton, and peanuts are marketed in the nearby cities of Richmond, Norfolk, and Suffolk. Suffolk, said to be the peanut capital of the world, is located in the adjacent county of Nansemond, about 20 miles from Smithfield, the largest town in Isle of Wight County.

Well-drained soils, such as the Norfolk, Craven, and Marlboro, and the improved poorly drained soils, such as the Onslow, Moyock, and Lenoir, dominate the agriculture, especially in the production of cotton, peanuts, and corn. Large yields of corn, soybeans, and hay are obtained from the poorly drained soils, such as the Bladen and Lenoir, after artificial drainage has been accomplished. The light-textured well-drained soils, which are inherently poor, and the heavy-textured poorly drained soils respond well to fertilizer treatments and are considered the most productive soils of the county. Large areas of poorly drained soils, still in forests and inherently the most fertile soils of the county, have great potentialities should economic conditions warrant their use. All the heavy-textured poorly drained soils must be artificially drained before they can become economically productive.

The rivers and ponds are very well stocked with many kinds of fish and to some extent afford a source of food supply to the residents of the county, and considerable pleasure and recreation to those living nearby. The oyster and fishing industries in the James River provide considerable cash returns to the people in the northern end of the county. The sale of timber and lumber also is a source of revenue.

( )



Areas surveyed in Virginia, shown by shading.

U. S. GOVERNMENT PRINTING OFFICE: 1941

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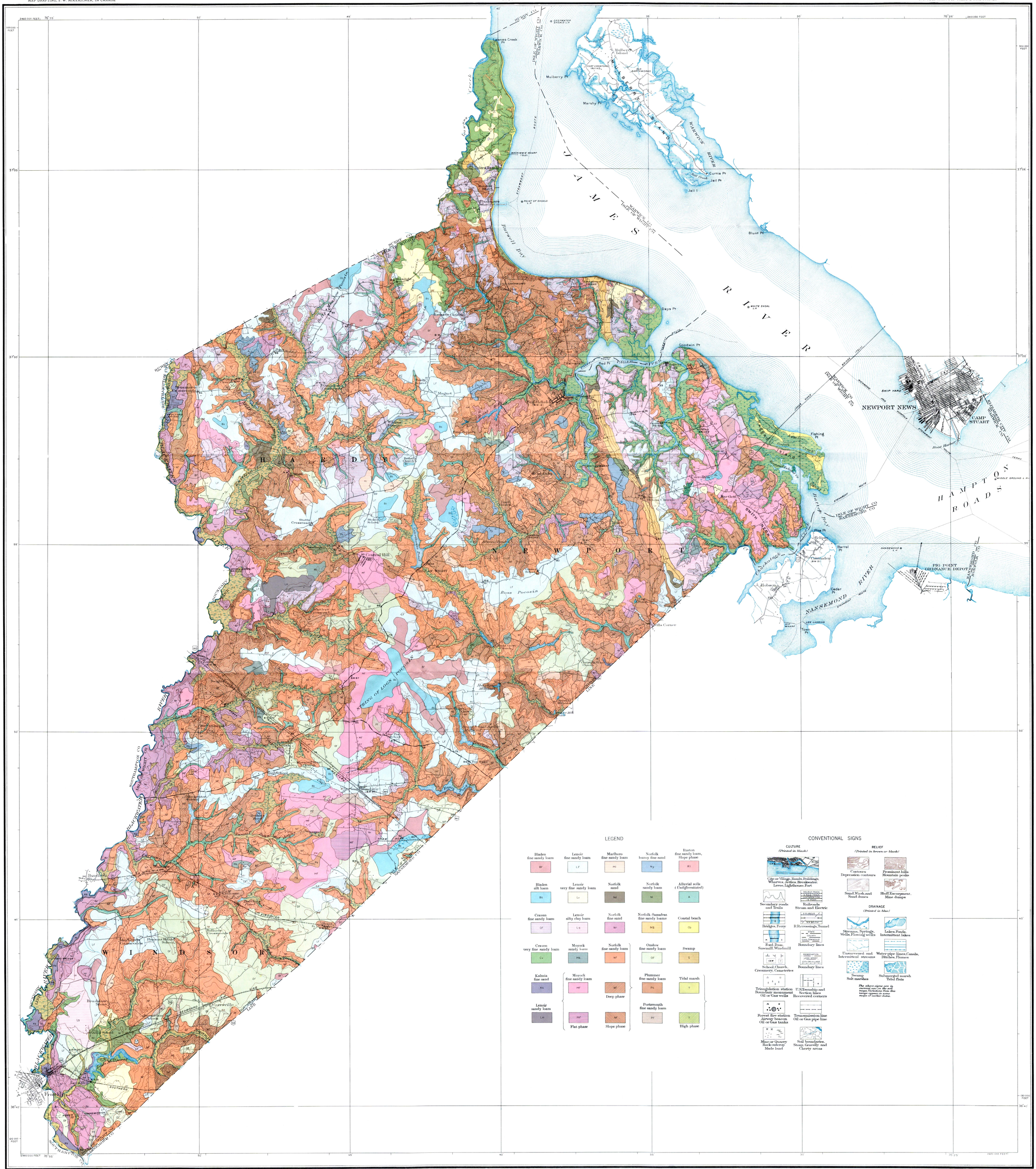
DIVISION OF SOIL SURVEY, CHARLES E. KELLOGG, CHIEF
MAP DRAFTING, J. W. McKERICHER, IN CHARGE

SOIL MAP

ISLE OF WIGHT COUNTY
VIRGINIA

VIRGINIA AGRICULTURAL EXPERIMENT STATION
A. W. DRINKARD, JR., DIRECTOR
T. B. HUTCHESON, HEAD, DEPARTMENT OF AGRONOMY
S. S. OBENSHAIN, IN CHARGE SOIL SURVEY



LEGEND

Bladen fine sandy loam (Bf)	Lenoir fine sandy loam (Lf)	Marlboro fine sandy loam (Ml)	Norfolk loamy fine sand (Ny)	Ruston fine sandy loam, Slope phase (Rl)
Bladen silt loam (Bs)	Lenoir very fine sandy loam (Lv)	Norfolk sand (Nd)	Norfolk sandy loam (Nl)	Alluvial soils (*Undifferentiated*) (A)
Craven fine sandy loam (Cf)	Lenoir silty clay loam (Ls)	Norfolk fine sand (Nr)	Norfolk-Sassafras fine sandy loams (Ns)	Coastal beach (Cb)
Craven very fine sandy loam (Cv)	Moyock sandy loam (Ms)	Norfolk fine sandy loam (Nf)	Onslow fine sandy loam (Of)	Swamp (S)
Kalmia fine sand (Ks)	Moyock fine sandy loam (Mf)	Deep phase (Mf)	Plummer fine sandy loam (Ps)	Tidal marsh (T)
Lenoir sandy loam (Lm)	Flat phase (Mf)	Slope phase (Nf)	Portsmouth fine sandy loam (Pf)	High phase (T)

CONVENTIONAL SIGNS

CULTURE *(Printed in black)*

- City or Village, Roads, Buildings, Wharves, Jetties, Breakwater, Levee, Lighthouse, Fort
- Secondary roads and Trails
- Railroads Steam and Electric
- Bridges, Ferry
- R.R. crossings, Tunnel
- Ford, Dam, Sawmill, Windmill
- Boundary lines
- School, Church, Creamery, Cemeteries
- Boundary lines
- Triangulation station, Boundary monument, Oil or Gas wells
- U.S. Township and Section lines, Recovered corners
- Forest fire station, Airway beacon, Oil or Gas tanks
- Transmission line, Oil or Gas pipe line
- Mine or Quarry, Rock outcrop, Made land
- Soil boundaries, Stony, Gravelly and Cherty areas

RELIEF *(Printed in brown or black)*

- Contours, Depression contours
- Prominent hills, Mountain peaks
- Sand, Wash, and Sand dunes
- Bluff, Escarpment, Mine dumps

DRAINAGE *(Printed in blue)*

- Streams, Springs, Wells, Flowing wells
- Lakes, Ponds, Intermittent lakes
- Unsurveyed and Intermittent streams
- Water-pipe lines, Canals, Ditches, Flumes
- Swamp, Salt marshes
- Submerged marsh, Tidal flats

The above signs are in current use on the soil maps; variations from this usage appear in some maps of earlier dates.

W. Edward Hearn, Inspector, District 2.
Soils surveyed by Edward Shulkcum, Virginia Agricultural Experiment Station, in charge, and R. E. Devereux and C. S. Simmons, U. S. Department of Agriculture.

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Scale 1/125000
1 0 1 2 3 Miles
1 0 1 2 3 4 5 Kilometers
Contour interval 10 feet.
Datum is mean sea level.

BASE MAP FROM U. S. GEOLOGICAL SURVEY SHEETS

Polyconic projection, North American Datum.
Base map from U. S. Geological Survey Sheets, 10,000 foot grid based upon Virginia (South) system of plane coordinates.
Surveyed in 1935-37. Series 1937.